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Part I.—Original Articles.

LOVE DEPRIVATION AND THE HYSTERICAL PERSONALITY.

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THROUGHOUT medical history we find evidence that hysteria has predominated over all other psychological disorders in attracting the attention of philosophers and physicians, yet despite the leading part which the study of hysteria has played in building up our present-day knowledge of psychopathology, it is remarkable how little we have advanced in acquiring an understanding of the cause of the hysterical syndrome itself. Even the wisdom of Freud has failed to offer us a readily acceptable explanation of hysteria, and to this day medical literature contains many theses suggesting that hysteria is related to disorders of the diencephalon, or to glandular dysfunction, and other such organic approaches to the problem. Seemingly we have no yardstick by which we can measure to what extent the hysteric is born, predestined by some elusive factor to develop the malady, and to what extent hysteria is imposed on persons by environmental circumstances. Much significant information on hysteria may be neglected by those who study it as an isolated phenomenon or disease entity, whereas it may well be that the truth of the matter is that at least a little bit of the hysterical reaction goes to form most of the neurotic syndromes met with in practice, and that the pure hysterical reaction is only an academic concept.

Thesis.

It would be superfluous herein to describe the various theories on the causation of hysteria, such as those of Freud, Jung, Charcot and Kretschmer, since these are adequately summarized in textbooks, of which Sadler's *Modern Psychiatry* is a notable example, and it will suffice for the purpose of this paper to offer only a few passing comments on the inadequacy of these theories.

Freud gave no explanation as to why the same complex will give rise to obsessional neurosis in one person and hysteria in another, and merely attributed the phenomenon to some vague constitutional proclivity.

Jung's view, that the hysterical personality is only an exaggerated form of the normally extraverted personality, would appear to be refuted by the frequency with which hysterical symptoms are seen in cases of schizophrenia and persons with marked schizoid personality traits.

Kretschmer believes that hysterical manifestations are associated with emotional immaturity, but he does not indicate whether emotional immaturity is a causative factor in hysteria, and whether by immaturity he means a congenital disposition or an arrested development.

It is generally believed that the kind of environmental situations which cause a child to feel unloved or unwanted are conducive to his developing non-specific neurotic personality traits or general neurotic tendencies. The present author's view is that love-deprivation situations specifically give rise to hysterical traits, as distinct from all other neurotic traits. This theory does not rule out the possibility of certain persons having some proclivity towards hysteria because of their inborn or congenital traits, but it does imply that, regardless of the nature of an individual's inborn tendencies, he will not develop hysteria unless he is subjected during childhood to situations causing him to crave affection. Thus, in the development of an hysterical personality, the love-deprivation situation is the deciding factor, and any inborn tendency towards emotional immaturity merely sensitizes the individual towards the causative situation, and affects the result only in degree and not in kind.

The love-deprivation situation experienced by the growing child creates in him a habit of love-craving, and this emotionally dependent attitude is the basic trait from which all other features of the hysterical personality spring. A person who has developed the hysterical or love-craving trait will not for that reason alone suffer an hysterical illness, because, as in the beginnings of all other forms of neurosis, an emotional conflict or crisis is the final precipitator of an attack of hysteria. There is no particular form of emotional conflict which is peculiar to hysteria as the final precipitator of the illness, and the selection of hysteria as a means of seeking a resolution of emotional conflicts is dependent on factors and emotional experiences which antedate the immediate or precipitating conflict. Even when the precipitating conflict is a very violent one, as has so often been noted in battle casualties, hysteria does not result from it unless the individual's conflict has been preceded by a conditioning towards love-craving. McGregor (1), for example, in analysing the findings in 2,228 consecutive patients admitted to a military hospital for neurosis, found that 48·01 per cent. formed a personality group having the traits of timidity, immaturity, dependence and frustration. "They came from broken homes or homes where there had been much emotional stress in early life. On the whole, this group revealed marked evidence of love-deprivation in childhood." It is probable that the intensity of emotional conflict necessary to precipitate an attack of hysteria is inversely proportional to the degree to which the individual has previously developed a love-craving, and this would serve to explain the occurrence of hysterical symptoms in a

person who previously showed no obvious proclivity towards developing hysteria.

This theory offers an explanation of some of the hitherto elusive features of hysteria, and it helps to clarify the ways in which the hysterical personality attempts to sublimate his emotional handicaps.

Most textbooks of psychiatry and general medicine include in their description of hysteria certain time-honoured observations, such as, that hysteria is more common in women than in men ; that it is more common in certain races of mankind than in others ; that it is more common in persons lacking in normal development or maturity ; that hysterics are more suggestible than are normal people ; and that hysterics are prone to have fits which bear a superficial resemblance to epileptic ones. Not all these observations are universally accepted, but they have held sway for such a long time that they may serve as a preliminary testing ground of the validity of our theory.

Sex Incidence.

Nowadays if almost all the patients in any women's ward of a general hospital were suddenly to throw hysterical fits the physician would be at least surprised if not horrified, but such a thing was by no means uncommon in any English hospital a century ago according to so eminent a writer of that period as Thomas Watson (2). We naturally turn to environmental factors in seeking an explanation of the decline in such outbreaks of mass hysteria, but the emphasis on sex-equality of our modern social system hardly answers the question. The woman of some generations past was probably not much dominated by masculinity in general, but rather was she dominated in an autocratic manner by the male head of her personal household. When a blind obedience towards the master of the house was the order of the day, not only for the children but the adult womenfolk of the house as well, it was to be expected that women should retain the feeling of dependence and the emotional immaturity of children, and that, like children, they should react to stress by emotional, rather than rational, modes of self-expression.

Faced with the statistical evidence of two world wars, no doctor could nowadays uphold the former view that the male sex has any marked immunity to hysteria, but in regard to the cases seen in everyday practice, the gross and more obvious symptoms of hysteria are seen more frequently in women than in men. Thus it is necessary for us to seek an explanation of this sex-incidence, which seems to persist despite the social freedom and sex-equality enjoyed by the modern woman.

Anyone who has tried training a dog to the gun knows that to reach perfection one must feed the animal personally, otherwise its first love will be for the feeder's and not the trainer's hand. And so with men, we may say that love finds its beginnings in the stomach, as is evidenced by the behaviour of infants, and indeed all children regard mother, and not the somewhat abstract father-breadwinner, as the real provider of daily sustenance and comfort, and therefore the one whose love is most desirable. Mother is the giver of security, and the child chooses her as the first object on which to exercise the mechanism of identification with all the by-play of imitation. The awareness of their

sex-similarity is conducive to girls having a stronger tendency than boys towards mother-identification, and it may thus be expected that girls should suffer the greater emotional trauma when mother, for any reason, fails to maintain her status as the most loved and lovable one.

Furthermore, we note that the little girl in her play naturally turns to domestic things more than the little boy, and to a degree which cannot altogether be attributed to a tradition forced on her by the nature of the toys presented to her, or by other such parental attitudes. From the beginning a little girl is a little mother, doing loving things to her dolls, and in such ways showing that she attaches more value to the composite love bonds of the home than does her little brother. Thus she is more sensitive than her brother towards factors which tend to weaken the love bonds between her and the persons who go to form her concept of home and security. The greater incidence of hysteria in women therefore tends to support the writer's view that hysteria is born out of a disruption of the normal love-bonds of the child.

Racial Incidence.

It has often been stated that hysteria is more common in Latin than in Nordic races. This opinion is no doubt based on an association between hysteria, volatile emotions, and a British concept of the Gallic temperament, rather than any racial emphasis arising out of Charcot's work. Jews are regarded as being more susceptible to hysteria than Gentiles, and the same is said of any race having the characteristic trait of not placing any great curb on the outward show of emotion. There is no strong evidence that Jews are, in fact, more prone to suffer from hysteria than are any other races, but if it is true, the explanation surely lies not in their having any characteristic emotional lability, but rather in their familial loyalty, and their exemplary devotion towards their children. In this respect we may apply the platitude "what has never been experienced is little missed," and, by not shunning the obvious, we may regard the over-loved child as being more sensitive to shortcomings in affection than the child who is not thus emotionally conditioned.

Markham (3) believes that climate affects the energy of nations, and gives examples of how energetic races of settlers have lost their drive in a few generations after settling in an adverse climate. We commonly associate hot climates with hot-bloodedness, unrestrained passions, and thus with the emotional lability of the hysteric. However, whether or not it is true that a warm climate predisposes a race towards more labile emotional reactions, it is quite clear that by living in a cold climate a race gains no insurance against an hysterical tendency. Cooper (4), for example, remarks on the common occurrence of hysteria amongst the Eastern Crees, a people who live in the region of Hudson Bay, as well as amongst Eskimos and Siberian Arctic people.

Kimball Young (5), quoting from a monograph by Gregory Bateson and Margaret Mead (6), dealing with the Balinese character, states that the Balis are particularly liable to exhibit hysterical dissociations, and they have complicated ceremonials and rituals. Bali infants are at first treated with great indulgence by their parents, but later are subjected to severe teasing, rejection and denial of love.

The same author, again quoting from Margaret Mead's work (7), describes certain characteristics of the Mountain Arapesh natives, which make an interesting comparison with those of the Balis. The Mountain Arapesh children are treated with great parental indulgence, and are taught to love and trust everyone. Few of these children show temper tantrums, and their aggressive tendencies are vented, not on persons, but on the physical world. Maloney (8) draws a somewhat similar comparison between the natives of Okinawa and those of Guam. The Okinawans are stoical and remarkably immune to neurosis, whereas the Guamanians are much lacking in these qualities. Maloney believes that these differences are not due to genetic factors, but result only from racial customs governing the attitude of the parents towards their children.

It is of course true that like breeds like, in the sense that an hysterical mother tends to create hysterical tendencies in her children. The following is a typical example :

Mrs. E. W—, aged 31, had suffered from headaches, bearing-down pain, and vaginal discharge since the birth of her only child. Although her confinement was singularly free from discomfort, her nerves were subsequently so bad that her child Michael was given over to the care of a foster mother for the first three months of his life. For seven years she was treated conservatively for retroversion and a vaginal discharge by a gynaecologist, who refrained from doing a surgical operation to relieve the condition by reason of the patient's nervous state. When she had thus suffered for seven years it became apparent that the extent and degree of her symptoms were disproportionate to the minor degree of her organic disorder, and she was therefore referred to a psychiatrist. The patient's history indicated that she came from very healthy and stable stock. She was the youngest of five sisters, and all members of her family had always enjoyed robust health. However, the patient herself had experienced great delicacy in childhood, particularly from the age 7 to 14, when she was thought to have had pulmonary tuberculosis, and during which time she suffered a host of more minor ailments, so that she had little or no schooling and was a great worry to her parents. Despite such handicaps she left home to undertake work at the age of 14, and immediately thereafter she recovered her health and remained free from any illness until, when she was aged 23, her son Michael was born. She had married at the age of 19, and a year later her first-born child died from gastro-enteritis shortly after birth, but her health was unaffected by this incident. To the psychiatrist she complained, in addition to the afore-mentioned symptoms, that frequently she wept almost the entire day because of a nausea which caused her to retch continually. At such times she could not bear her son Michael to be near her, and the child had so goaded her to distraction that she had thrashed him with a leather strap until his body was covered in weals. Michael, she said, was an affectionate child but too demanding upon her, and he flew into rages if she failed to obey his wishes. When thwarted he had threatened her with a carving knife, had torn up his clothes, and had thrown things out of the window. He continually twitched his nose, made a peculiar sniffing noise, and also displayed the odd mannerism of shrugging his shoulders as he walked. The child had suffered much with chest trouble, and indeed for two years his mother suspected he might have pulmonary tuberculosis, so that she had perforce to treat him with the care appropriate to a delicate child. She commented on how remarkable it was that, despite his appallingly bad behaviour when at home, the child behaved quite normally whilst at school.

In recording the clinical data of cases, such as the above, where hysterical symptoms have appeared in successive generations, one finds little evidence to support the view that hysteria is transmitted by an hereditary factor, but, on the contrary, one finds ample evidence that the hysterical tendency is

environmentally imposed. In all probability a racial proclivity to hysteria is bound up with racial customs governing the attitude of parents towards their children, especially in regard to the degree and constancy of affection which is shown them.

Lack of Maturity.

On the face of it the hysterical reaction seems to be a primitive or unintelligent mode of defence. It is the only well-defined neurotic reaction which we observe in the lower animals, and one the operation of which would seem to put no tax on intelligence. Kretschmer (9) regards hysterical manifestations as being predominantly vague, impulsive ways of reaction occurring in simple, primitive, or immature persons, and considers that it appears relatively seldom in enigmatic, highly differentiated personalities possessing intricate richness of experience.

Miller (10), commenting on the lower incidence of gross hysterical reactions in soldiers during the recent war, as compared to the 1914–18 war, attributed it in part to the better elimination from front-line service of men of low intelligence.

In general, however, there are few references in medical literature to any relationships between hysteria and intelligence. Adult hysterics behave in so many respects like children that they give the superficial impression of being intellectually childish. The writer has noted how frequently hysterics make use of a lisping, childish intonation, and how readily one gains the impression that they are in all respects childish, only to correct it later on applying intelligence tests.

The immaturity of the hysteric appears only in the affective aspect of the psyche, whereas the cognitive and conative aspects are relatively mature.

When one finds evidence of childish or immature emotional reactions in an adult of average or above-average intelligence, the inference is that such a person is endeavouring to satisfy a wish to remain a child. The characteristic attitude of the hysteric is one of dependence and intolerance of any suspected inattention on the part of a parent substitute. The history of such cases indicates that this dependent attitude is not a sudden regression from a mature attitude to a childish one, but rather is it one which has constantly existed from that age at which it would appear appropriate.

The craving for love may well be ranked with many other habits of childhood, all of which tend to stick more fast than the habits which are formed in the less impressionable adult years, and as such the hysterical emotional foundation is but a mere evidence of a bad upbringing.

Suggestibility.

The following anecdote of Thomas Watson (London, 1857) illustrates that the suggestibility of hysterics was well recognized before Janet's time.

"A lady told me not very long ago that an acquaintance of hers, a member of a family of distinction, had been lying I know not how long on her back; that position having been prescribed to her by some medical man for a presumed disease

of the spine. She lost all power of using her legs ; but she got quite fat, as indeed, well she might, for her appetite was remarkably sharp, and she lived chiefly upon chicken ; and the number of chickens she devoured was incredible. She lived at some little distance from the town, and at last Sir Benjamin Brodie was sent for to her. Now Sir Benjamin, to use a vulgar phrase, is up to these cases, and he wished to see her try to walk ; but she declared that the attempt to do so would kill her. He was resolute, however, and had her got out of bed ; and in a few days' time she was walking about quite well, and very grateful to him for his judgment and decision. A medical man of less name, or of less determination, would probably have failed."

Eysenck (11) has recently disputed the long held and almost universal belief that hysterics are more than usually suggestible. He carried out tests on a significantly large group of neurotic patients, applying suggestion to them through the impersonal medium of a gramophone record, and measuring the effect by various ingenious mechanical devices. He found that, when subjected to this form of suggestion, hysterics are the least suggestible of all neurotics. His findings, however, appear to have no bearing on suggestibility in the clinician's sense of the word. It is characteristic of the hysteric to behave with emotional calmness in the presence of strangers, and to exhibit tantrums when in the presence of a particular member of the family or a close friend. Similarly the hysteric who fails to show any response when suggestion is applied to him through a record may well respond in ample measure when the same suggestive formula is applied to him by an experimenter in person. Eysenck, in fact, found that the personality of the experimenter does affect the response, and no doubt for that very reason chose a gramophone record as the means of eliminating this variable factor. Apart, however, from the prestige of the clinician in the eyes of the patient, the suggestibility of the latter must also depend on the extent to which the suggestions applied either agree or conflict with his conscious and unconscious wishes. The writer inclines to the view that the amenability of an hysteric to suggestion is proportionate to the degree to which the doctor is capable of making himself appear to the patient as one who is sympathetic but dominant. He must create in the patient a subjective feeling of dependence mixed with respect or awe. He must play upon those sentiments which are developed out of the basic emotions of fear and love.

It is well known that hysterics are very unresponsive, and in fact are negativistic towards suggestion applied by persons in their family circle. This is understandable in that the hysteric constantly taunts those in his domestic circle in his desire to provoke their sympathy, and thereby elicit those constant assurances which are demanded by his insatiable love-craving. The hysteric who fails to elicit sympathetic responses from those near to him will choose mere attention as the next best thing. Of all things he cannot bear to be ignored, and thus will find some solace in stimulating irate attention if he fails to obtain sympathetic attention. It is, furthermore, noteworthy that hysterics possess a remarkable ability to excite the sympathies of strangers, but the hysteric does not attempt to play unduly on those sympathies until such time as he feels he has built up the kind of emotional situation in which he exercises the dominant or controlling role. In the doctor-patient relationship the hysteric feels that he will be shown interest and sympathy without

his making the efforts which are customary to him in his relations with other people. His relationship with a doctor is, therefore, one calculated to create in him only a subjective feeling of dependence. This feeling of dependence is associated with that age in childhood in which parental direction tends to be accepted tacitly and without question, and thus it is to be expected that the doctor will wield a suggestive power which is denied by the patient to others who may be equally or even more sympathetic than the doctor. The response to medical suggestion will furthermore depend on the degree to which the doctor corresponds to the patient's ideal concept of a parent substitute.

Fits.

Textbooks devote much space to the discussion of the differential diagnosis of hysterical and epileptic fits on a basis of neurological signs, and thus emphasize the physical rather than the psychological differences between the two disorders. With many physicians, even nowadays, the diagnosis of hysteria is reached, more often than not, on a negative rather than a positive basis of signs and symptoms. It is a diagnosis reached by a process of eliminating all positive indications of organic disorder.

This traditional approach to the diagnosis of hysteria, and in particular of hysterical fits, may in part be due to the fact that many hysterics are very similar to epileptics in their temperament. The psychological approach to the differentiation of the two syndromes, therefore, appears to be full of diagnostic pitfalls, and one the pursuit of which often leads to compromise or non-committal diagnoses such as that labelled "hystero-epilepsy."

Much attention has been given to the question as to why hysterics should at times exhibit fits which bear a superficial resemblance to epileptic ones. The similarity of the hysterical fit to coitus and orgasm lends force to the Freudian theory of the sexual motivation of hysteria, but the Freudian theory appears over-stretched when it is suggested that epileptic fits likewise have a sexual significance. It may be more profitable to study the contrary question: why should epileptics bear some symptomatic resemblance to hysterics?

The writer recalls being warned in student days to be on guard when making the diagnosis of idiopathic epilepsy in a case where fits first appeared in adult life. It was implied that when epilepsy begins in adult as distinct from childhood years, it is usually traceable to some obvious organic cause, such as a cerebral tumour, neuro-syphilis, a toxaemia, etc., but the warning lacked a corollary, since it left unanswered the question, what is the usual age of onset of idiopathic epilepsy? Many standard textbooks of neurology fail to supply an answer to that question.

Turner's table, quoted by Kinnier Wilson (12), although it lists the age of fit onset of 1,000 cases of epilepsy, does not supply a satisfactory answer, since it does not exclude non-idiopathic epileptics. However, according to Turner, the age of puberty is the time of choice for the onset of epilepsy (viz. 11 to 14 years), and the mean age of onset for his 1,000 cases was 14·8 years.

We frequently note that epileptics are similar to hysterics in temperament, although they differ from them in character and in total personality.*

The writer, however, has gained the clinical impression that those epileptics in whom the fits commenced not later than the age of puberty form the group which shares the same temperamental stigmata as the hysteric, viz. the traits of dependence, sympathy-craving, and emotional unrestraint. These traits are rarely seen in the epileptic whose fits commenced in adult years. The temperamental relationship between epilepsy and hysteria may, therefore, be simplified if one is prepared to accept the view that such temperamental traits are characteristic of hysteria and merely incidental to epilepsy. The epileptic child is frequently fussed over, protected, mollycoddled, over-loved, and in general subjected to all those environmental factors most conducive to the development of a sense of dependence, and the hysterical trait of love-craving, which as readily result from the excessive show of parental love as they do from the opposite factor of parental love denial.

Hysterical Traits.

Sadler (13) aptly summarizes the features of the hysterical personality in one sentence—" Hysteria, at least in many cases, seems to be a persistence in adult life of that altogether normal desire of the child to show off, to do stunts, to attract attention, and to create comment about his performance." One finds much wordy debate in literature about the cause of certain dissociation phenomena, such as somnambulism, for example. But somnambulism is principally a disorder of childhood, and is popularly regarded as a common and not serious disorder which is grown out of in due course, and after all, the layman only regards somnambulism as a really abnormal thing when it persists into adult life. All such hysterical phenomena savour of being mere evidence of an arrested emotional development. Even in the rare cases of dual or multiple personality we find almost invariably that one " personality ' is that of a child.

It does not add to or clarify one's concept of the hysterical personality to draw up a list of personality traits, such as lack of emotional inhibition, tendency to convert mental into physical suffering, day-dreaming, exhibitionism, sexual maladjustment, and self-engrossment. Admittedly a host of traits, in addition to these examples, are known to be hysterical characteristics, but all such traits are simple offshoots from the one fundamental trait of love-craving. The inborn or inherited personality traits of the individual modify such acquired traits as that of love-craving, and in all probability that is why one hysteric will exhibit his love-craving tendency most particularly in the subsidiary trait of exhibitionism, and another will exhibit it principally in the shape of uncontrolled emotions.

If, for the sake of argument, we presume that the pair of opposite qualities, introversion-extraversion and impetuosity-deliberateness, are inborn traits,

* The writer uses these terms in the following sense :—
1. Temperament: The habitual emotional tendency of an individual.
2. Character: The individual's way of behaving when faced with moral issues.
3. Personality: The distinguishing qualities of an individual as a whole.

we may then consider their probable modifying effect on the acquired trait of love-craving. The introvert, that is the person combining such traits as idealism and the asocial attitude which arises from lack of sentimental rapport with the common run of humanity, will most surely translate a love-craving trait into the exhibitionist subsidiary trait, which is aimed at attracting the attention of the masses rather than that of individuals. Again, if we presume that extraverts be divided into the fundamental sub-types of impetuous extraverts and deliberate extraverts, the impetuous extravert will surely form that class of hysteric who is principally recognizable by his uncontrolled emotions, and the deliberate extravert will form the class of hysteric recognizable by his effort to sublimate the love-craving trait in the pursuit of altruistic humanitarian vocations.

Success and Failure in Sublimation.

Failure on the part of the hysterical personality to sublimate his love-craving shows itself principally in the form of marital incompatibility. The marital difficulties of the hysteric appear to emanate from three factors. Firstly, the hysteric so frequently has a pressing desire to escape, by any means, from an unhappy parental home that he or she will marry too hastily, and by marrying at too youthful and unsophisticated an age will frequently choose an unsuitable partner. Secondly, the insatiable love-craving trait causes the hysterical personality to seek constant assurances of fidelity and love, and to make demands of the marital partner which begin by causing irritation and soon become intolerable. Thirdly, the hysterical personality is very often sexually frigid. The sexual frigidity of hysterics is readily understandable in that they crave the type of love which is shown to a child, that is, a kind of love relationship which is all-take-and-no-give, and not an adult form of love, or the mating type of love which demands reciprocity of feeling and action in its culmination through the sexual act. In general it may be said that the hysterical personality does not seek a mate, but marries rather a parent substitute, and the success of such a marriage therefore depends largely on the willingness of the non-hysterical partner to play the role of a parent substitute.

Mrs. U. H—, aged 20, was admitted to hospital having taken an overdose of phenobarbitone tablets which had been prescribed for her husband, a sufferer from nervous dyspepsia. The patient was above average in intelligence, and showed a clear understanding of her temperamental inadequacies. Since she married at the age of 19 a man five years older than herself she had continually created stormy scenes at home by reason of her insatiable desire to stimulate her husband, a stolid and undemonstrative man, into daily dramatic exhibitions of his love and devotion towards her. She ostentatiously flirted with other men, but always in her own home, and with no intention other than that of her morbid desire to see the effect of it upon her husband. She stated that she had been utterly spoiled by devoted parents all her life, and that prior to her marriage she had on several occasions staged suicidal attempts with the sole object of enjoying the subsequent fuss and tender concern shown to her by her parents.

The hysterical personality may, however, and usually does, direct his or her love-craving tendency into socially useful and acceptable channels. Successful sublimation most commonly takes one of the following forms :

(*a*) Skill in handling small children.

(*b*) The pursuit of humanitarian vocations such as missionary work, nursing, and social welfare.

(*c*) Histrionic ability.

Hysterical personalities certainly take a special interest in children, and have an aptitude for any kind of work which involves their being in close personal contact with children. It is, in fact, very rare to find a hysteric who shows a dislike of children's company. In all probability the company or care of small children attracts the hysterical personality because such a person, having an arrested emotional development, is largely free from the emotional inhibitions of a more mature personality, and can in a quick and natural way find emotional rapport with a child. Anyway, whatever may be the explanation of this hysterical aptitude, the writer has noted, when giving vocational advice to young adult hysterics, that such patients show a particular willingness to discuss the features of various jobs involving the care of children.

Miss O. B—, aged 21, suffered from frequent noisy attacks of weeping. She had an excellent school record of academic attainments, but despite her high intelligence was very irresponsible in behaviour, having twice caused herself to have an abortion. Her mother had always been fully employed outside her home, and had always shown scant affection towards the patient. Miss B— had a burning desire to undertake training as a children's nurse, and was convinced that this vocation would satisfy the emotional void in her life.

Miss A. M—, aged 16, suffered from occasional trance-like states in which she had terrifying visions and heard mysterious voices. She was the only child of a chronically neurotic mother who suffered from a duodenal ulcer, and who was self-engrossed to the extent of never having shown any affection towards her daughter. Miss M—'s only vocational desire was that she should become a nanny.

There furthermore appears to be little doubt that the hysterical personality is particularly attracted by the sort of occupations which appear to offer the novice the opportunity of playing parts on the stage of life akin to those, say, of Florence Nightingale, Mahatma Ghandi, and Karl Marx. We therefore find a high proportion of hysterical personalities in the medical, nursing and ancillary medical professions, missionary work, social welfare, and left-wing politics. The novice seeking a vocation, if he has the hysterical trait of love-craving, is apt to build a phantasy around such vocations, and to picture himself or herself as the bountiful provider of a worshipping and dependent humanity.

Mrs. E. C—, aged 57, had for 8 years suffered from severe pains in her hips and spine, for which exhaustive examinations failed to reveal any physical cause. She believed her symptoms had been caused through overwork, when some nine years previously, during a time of financial stress, she had gone out to work in addition to attending to duties in her own home. She volunteered the information that she liked "queer jobs," and had only undertaken work such as taking care of the aged, the blind and the deaf. She was the eldest of a family of six, all of whom, with the exception of her youngest sister and herself, had died in infancy. As a child she was unhappy because her mother had never taken any interest in her. On leaving school she had wished to be a doctor but her father could not afford her education, and she was also frustrated in attaining her second vocational choice of becoming a nurse.

Mr. J. M.—, aged 36, had become so intolerant of orders, and so subject to violent outbursts of rage, that he could not hold a job. For some months he had

also suffered phases in which he lost his memory. He expressed doubts about his wisdom in having married since he had always had a hankering desire to be a priest and because he " wanted the kind of job in which he could help people who are in trouble." His wife said he was a soft-hearted and attentive man, but that he was utterly dependent on her in all matters requiring decisions. He was removed from an orphanage by a grandmother, who adopted him; he had lived alone with her from an early age until manhood, and had married immediately after her death.

The job is attractive to the hysterical person in proportion to the degree to which he anticipates that it will get him emotionally involved with other people. The vocational phantasy of the hysterical person is no idle or impractical phantasy. Hysterical people are generally of good intelligence, and the combination of that factor with interest in the job makes for success in it.

Apart from their tendency to stir up dramatic situations in the home, hysterical people generally have a well-developed histrionic ability. The contrary may also well be true, that to be a great actor one must possess a hysterical tendency, since, if one associates histrionic ability with marital difficulty, the large number of divorces amongst film stars becomes more readily understood.

Love Deprivation Situations.

The sort of domestic situations causing a child to crave parental love may be conveniently grouped as follows :

(*a*) Death of a parent.
(*b*) Parental strife.
(*c*) The chronically sick parent.
(*d*) Prolonged illness of the child.
(*e*) Separation of child from parents.
(*f*) The uninterested parent.

Death of the mother is, as a general rule, a more serious catastrophe from a child's viewpoint than is death of the father. Where the family is large, and the eldest female child is old enough to fill the role of a mother substitute, the younger children are thereby somewhat protected from emotional trauma, and it is, on the whole, unusual for the younger children of a large family to develop the hysterical personality as the result of bereavement. When lacking a mother substitute for his children, the bereaved father commonly hands over the care of a child to the grandparents or other such relatives. Stepmother difficulties arise, not so much in respect of any lack of affection on the part of the stepmother for the child, but rather because of her attempting to play the mother role at too long an interval after the death of the actual mother, by which time the child has accepted some other female relative as a mother substitute.

Parental strife is a particularly strong factor in creating hysterical tendencies, especially when the child feels obliged to take the part of the " good " against the " bad " parent. One commonly obtains this kind of story from a

hysterical patient: "My father was a drunkard and used to beat my mother. I was terrified of him; I was sorry for my mother and used to take her part. Now that I look back on it with mature reason, however, I realize that my father wasn't really so bad as mother used to make us children believe, and I now realize it was largely her fault as much as his, and she probably drove him to drink." In such situations one finds very often that the mother is of hysterical personality, and that the child's hysterical tendency not only emanates from over-dependence on mother's protection from the terrifying father, but also from a process of identification with mother, and a consequent mimicry of her emotional unbalance.

The chronically ill parent tends to excite jealousy on the part of the child, who naturally resents the unfair advantage of the invalid in competing for the attention, and therefore the affection, of the other parent. The child soon learns the power behind the weapon of illness, and frequently in later life reproduces the parental illness in unconscious mimicry. Freud's case "Dora" gives an excellent portrayal of this factor in the production of a hysterical personality.

Any prolonged illness, especially one necessitating the child being nursed at home, tends to create hysterical tendencies in the child, although the manner in which it does so is rather more obscure than that of the other environmental factors which have already been discussed. From one point of view it would seem an unexpected thing that sickness should cause a child to crave love, since sickness can but add to the parental attention which is normally shown towards the child. In fact, however, a prolonged illness tends to increase the child's feeling of dependence, and the greater degree of sympathetic attention and allowance for naughtiness shown to the sick child come to be regarded by the child as normal, and therefore expected, attitudes. The impersonal atmosphere of hospital, especially that of a children's ward, is in general a far more healthy one for the sick child than its own home. In hospital the sick child is unlikely to feel singled out or made the focus of attention, and when the child returns home the parents have the advantage of resuming normal emotional relationships with the child, more or less at the point where they were interrupted, and of regarding the illness and hospitalization period as matters which do not concern or affect the ordinary parent-child attitudes. On the other hand, the sick child who is nursed through a long illness at home, and especially if nursed by its mother, is in a far less favourable position than the child who is treated in hospital, since on the restoration of health, not only the child, but also the mother or even both parents, have to readjust themselves towards resuming normal attitudes and domestic routine.

It would be superfluous to comment in any detail on the effects of the war-time evacuation of children from cities, since the psychological disasters associated with it are only too well known. It is, however, difficult to assess the degree to which the war-time evacuation factor in itself has affected the general child health of the nation, since so many other factors operated simultaneously, all of which tended to upset the average child's sense of security. The separation of parents, for example, gave rise to many cases of marital infidelity, so that many children returned from evacuation to already broken

homes, and ones which may have caused them to yearn for the affection of their foster parents of evacuation days. One may at times be misled into accepting a "separation from parents" situation as being the initial factor in the causation of child hysteria, when the sending away of a child from its parental home may in actual fact be a consequence of parental incompetence or failure, and a mere compensatory step to overcome some already well-developed pathological child-parent relationship.

Want of interest in the child on the part of a parent is, of course, a difficult factor to track down if the examiner places overmuch reliance on the statements of parents. The subjective attitude of the child to its parents is obviously more important than the attitude of the parents judged objectively. Frequently, in taking the history of a case from various sources, one will find evidence, say, that a mother has lavished affection on her daughter, but on questioning the daughter one finds that all the outward show of maternal affection was nullified by the mother's unconscious disclosure to the daughter that she would have preferred a son.

Some Cases from Medical Literature.

Professor Janet (14) was of the opinion that the desire to be the focus of attention or love, although commonly seen in hysterics, is by no means a characteristic feature of hysteria. It is noteworthy, however, that most of Janet's case descriptions begin at the point where hysterical symptoms were first manifested, and it is thus evident that he devoted more attention to the description of hysterical symptoms than to the kind of personality traits which are the forerunner of such symptoms. In fact, whenever Janet remarked on the antecedents of a case of hysteria, he invariably described a situation of a type which is conducive to the development of love-craving. His famous case, Irene, has been much quoted by Hart (15), McDougall (16) and others, but these writers, as well as Janet himself, seemingly attached little significance to the fact that Irene's father was a drunkard, and that she experienced the disastrous effects of a disrupted home long before her hysterical symptoms made their first appearance.

Freud (17) gave a detailed account of his analysis of an hysterical girl to whom he attaches the pseudonym "Dora." The girl had no affection for her mother, but was much attached to her father, a chronic invalid, whose symptoms she mimicked in her hysterical illness. Freud described the features of her domestic environment in a manner suggesting that he did so with a view to illustrating her neurotic heredity, rather than the part which maternal love-deprivation played in conditioning her towards all those very sexual maladjustments to which he attached the major importance in tracing the underlying mechanism of her hysterical symptoms. Thus in his description of the case, Freud appears not to touch upon the core of the problem at all.

In the writer's experience, whenever one meets with a case of a girl who shows an obvious emotional attachment to her father in preference to her mother, it is equally obvious that the mother has been lacking in ordinary parental affection. The abundant case evidence supporting this point suggests that father-fixation in the case of girls is not a normal phase of development

of the sexual instinct, but a misdirection of the child's ordinary desire to be loved from its natural focal point on to the next best thing.

To return to the case of Dora, Freud found in her fondness for the children of "Mr. K." evidence of her unconscious wish to be loved by "Mr. K." In this respect Freud made no allowance for the aptitude frequently shown by adult hysterics for earning the love and respect of children, their liking for small children, and their ability to maintain an emotionally stable attitude towards children in contrast to their stormy emotional attitudes towards adults.

Although Morton Prince (18) devoted almost an entire book to the discussion of his remarkable case of multiple personality, "Sally Beauchamp," we find that he merely makes a passing reference to the following features of the case-history, which, in fact, are worthy of greater attention :

"Sally's" father was a man of violent temper, and her parents were unhappily married. Her mother exhibited a great dislike of her, for no apparent reason other than that of her facial resemblance to her father. Miss Beauchamp felt she was ignored by her mother, except on occasions of a reprimand, but nevertheless she idealized her mother, bestowing on her almost morbid affection, believing that the fault was her own, and that her mother's lack of affection was due to her own imperfections. When she was thirteen her mother died and, during the three years following, she lived in great unhappiness with her father, until, at the age of sixteen, she ran away from home.

Having regard, furthermore, to the writer's foregoing comments on hysterical vocations, there may be another significance in Dr. Prince's footnote—"She tried three times to do professional nursing and broke down."

William McDougall (16) likewise ignores love-deprivation factors in his description of hysterics. Of the many cases which he describes in his *Outline of Abnormal Psychology*, he refers to features of the early history in only two of them, namely, Dr. Morton Prince's case Sally Beauchamp, and Dr. Walter Prince's case Doris Fischer. In regard to Doris he states—"She was the youngest child of poor parents. Her drunken father, in the course of a quarrel with his wife, threw the child, then three years of age, violently upon the floor."

As yet a further example of the scant attention which psychiatrists have given to the significance of environmental factors in the causation of a love-craving habit, and the causative influence of that trait in hysteria, we may note that, of the eleven cases of hysteria described by Henderson and Gillespie in their *Textbook of Psychiatry* (19), reference is made to features of the early history in only one case (case 73). That reference is well worthy of quotation : "He was always very nervous of his father, who was very severe in his punishments. In his boyhood the patient was thrashed, sometimes every day for a week, put on dry bread and water and deprived of his clothes. While at school (from 5 to 15 years) the father made his son work in the garden before school hours from 4.30 a.m."

So it is with any other case descriptions of hysteria in medical literature. Where an author describes the antecedents of a case of hysteria in any detail, we generally find he does so with a view to emphasizing points indicative of neuropathic heredity, but invariably, given a detailed history of a case of

hysteria, we find that the hysterical symptoms were preceded by experiences of a type calculated to create in the patient the feeling of being spurned or rejected by those whose love he would most have valued.

Conclusion.

The clinical syndrome which we call hysteria, and which is characterized by various dissociative phenomena, requires for its production a remote as well as an immediate factor. The immediate factor is an anxiety-provoking situation ; the remote factor is the disposition which we call the hysterical personality. The hysterical personality is that having the one characteristic and fundamental trait of love-craving which manifests itself in various subsidiary traits such as exhibitionism, sexual frigidity or excess, tantrums, desire for "emotional" occupations, hypochondriasis, and so on. The love-craving trait does not appear to depend on congenital factors, but rather is it an emotional habit acquired by persons who are subjected to abnormal emotional stimuli during the impressionable years of childhood. The particular set of environmental circumstances which cause a person to crave love, in turn colour or shape the manner in which that trait subsequently shows itself. Thus, for example, the girl who is rejected by her mother, but who is fussed over by an indulgent father, may later marry a man much older than herself, and make excessive demands upon his show of affection whilst at the same time being sexually frigid towards him. Again, the boy or girl who has been treated by both parents with harshness or coldness may subsequently seek emotional satisfaction in leading the life of a libertine.

Love-craving is only one of the several dispositions which may be acquired by a child through the effect of adverse environmental factors. The hysterical or love-craving trait is that particularly influencing the affective aspect of the psyche, whereas the obsessional or guilty-conscience trait concerns more the conative aspect, and the inferiority or self-debunking trait is mainly a cognitive maladaptation.

The same anxiety-provoking situation may in one individual cause a state of pure anxiety leading to exhaustion, in another it may be translated into symptoms more worthy of the title obsessional neurosis, and in yet another it may alternately manifest itself in the shape of hysteria. Thus, the particular neurotic syndrome which results from anxiety is determined, not by the form of anxiety itself, but on the dispositions acquired by the individual in the course of his development.

When we ascribe the hysterical personality to an individual we do so in a quantitative, and not a qualitative manner, because the desire to be loved is altogether a normal thing.

> Lieben und geliebt zu werden
> Ist das höchste Glück auf Erden.

An individual may have a hysterical personality, and yet exhibit a form of neurosis which is mainly obsessional because of having a yet more strongly developed obsessional than hysterical trait in his personality.

The hysterical trait is probably the most common and widespread of all

acquired personality traits. Its clinical recognition is of prime importance in questions of vocational guidance and the rehabilitation of convalescent psychotic or neurotic patients.

References.

(1) McGregor, H. G. (1944), *J. Neurol. and Psych.*, January, **7**, 21.
(2) Watson, Thomas (1857), *Lectures on the Principle and Practice of Physic.* London.
(3) Markham, S. F. (1944), *Climate and the Energy of Nations.* Oxford University Press.
(4) Cooper, J. M. (1934), "Mental Disease Situations in Certain Cultures—a New Field for Research," *J. Abnorm. and Soc. Psychol.*, **29**, 10.
(5) Young, Kimball (1946), *Handbook of Social Psychology.*
(6) Bateson, Gregory and Mead, Margaret, *The Balinese Character: a Photographic Analysis.* Special publication, New York Academy of Sciences, vol. 2.
(7) Mead, Margaret (1935), *Sex and Temperament in Three Primitive Societies.*
(8) Maloney, J. C. (1946), "On Oriental Stoicism," *Amer. J. Psychiat.*, **103**, 60.
(9) Kretschmer, *Hysteria*, Ment. and Nerv. Dis. Monograph.
(10) Miller, Emmanuel (1945), "Psychiatric Casualties among Officers and Men from Normandy," *Lancet*, 24 March, p. 364.
(11) Eysenck, H. J. (1947), *Dimensions of Personality.* London.
(12) Wilson, Kinnier (1941), *Textbook of Neurology*, **2**, 1522. London.
(13) Sadler (1945), *Modern Psychiatry.*
(14) Janet, P. (1907), *Major Symptoms of Hysteria*, p. 313. London.
(15) Hart, B. (1930), *The Psychology of Insanity.* Cambridge, 4th ed.
(16) McDougall, William (1940), *Outline of Abnormal Psychology.* London, 3rd ed.
(17) Freud, Sigmund "Analysis of a Case of Hysteria," *Coll. Papers*, **3.** London.
(18) Prince, Morton (1906), *The Dissociation of a Personality*, p. 12. London.
(19) Henderson, D. K. and Gillespie, R. D. (1932), *A Textbook of Psychiatry.* London, 3rd ed.

AN INTERPRETATION OF PLAY THERAPY BY THE PSYCHOSOMATIC THEORY OF FAMILY SEXUALITY.*

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I propose to explain the application to play therapy of a theory of family sexuality (Turner, 1947), upon which I have been working for some time.

When children are referred to me I see them individually and ask them to tell me, usually by their play (Lowenfeld, 1935), what real or imaginary thing could have caused their symptoms. I then follow the technique of Melanie Klein (1932) in that I straightway give an interpretation.

Like Freud and those who have followed him I see a sexual significance in the symptoms, and when I have not done so I have often found later that I have been wrong. You will be familiar with the mechanisms of the mind which he and others have described, and so I am not going to stress them in this paper, although I endeavour constantly to be alive to their value. The theory which I am going to give has the same background with which you are familiar, but does, I believe, carry our knowledge a step further. If you do not comprehend it at once I hope that it will become clearer to you as an interpretation of play therapy when I give you illustrative cases. The theory is this :

Animals were men's primitive environment, and killing was the expression of the relationship of human beings to these animals. We killed smaller animals for food, and we hoped to avoid the larger animals which desired to make food of us. For this situation there was prepared for us through the ages an inheritance of appropriate pugnacious instincts, and for this situation of the jungle our primitive parents trained, developed and sharpened our instinctual inheritance. It is my theory that suckling begins this training of the instincts. Man does not live by bread alone, nor babies just by milk ; and it is my theory that the emotions of suckling portray the killing and being killed by animals for which the young are being nurtured. In suckling, therefore, the baby learns to kill the inferior species of animal portrayed for it by the mother. In suckling also the baby learns to fear death from the superior species of animal portrayed also for the baby by the mother. Such is the mother's duty primitively, to identify herself with the animals, with which the young must become familiar in order to live.

In coitus the male and the female demonstrate, the one to the other, their duties. In the courtship of the sexual act he portrays the hunting of the

* Read before the Midland Child Guidance Group at the Francis Dixon Lodge Child Guidance Clinic, Leicester, on 19 July, 1947.

inferior species with which she is identified. In coitus he first portrays the killing of the inferior species, and then at the orgasm he portrays the yielding of his life to the superior species of animal, again played by the female. The first half of the act demonstrates what is good for the family, namely the death of the inferior species, which is eaten for food: the second half of the act demonstrates the bad, namely the risk of death from a superior species, a risk which the male must take when out hunting for the family.

You will notice that the theory gives a normal significance for the animal figures and ambivalent emotions which are such a constant feature of the play of children, both in and outside of the clinical room.

In the light of this theory, which says that mothers are identified with animals, it is not surprising that children should love pet animals, and love stories about animals, especially when the animals behave and dress like human beings. Nor, in view of the knowledge of the good and evil of violent emotions, which the theory states is implicit in sexuality, is it surprising that children show such ambivalence, when in their mutual play they often pretend to kill or be killed, and arrange amongst themselves in the most good-natured way who should be dead.

In suckling it is believed the child is taught these emotions with love. In weaning it is taught again with love to forget these things, for civilization demands sublimation. In the growing biological preparedness for coitus the same primitive emotions revive, to be let loose in coitus and suckling but otherwise to continue sublimated. Succeeding generations of human life therefore take on this sequence—in suckling is instruction in primitive killing; from this one is weaned to continue with civilized instruction; in marriage is the return to primitive emotions of killing and the birth of the next generation and a repetition of this cycle.

Such was the interpretation I put upon this sand tray (Fig. 1), done by a boy, A. T—, 8·7 years, I.Q. 135, who said the wild horses were being driven to the enclosure to be trained and then ridden away. The picture is like a baby growing up I told him: at the breast (the hills) he learns of wild animals; then he is trained in peaceful pursuits. The horses are now tame, like his civilized mother. But the primitive emotions are still there in the horses I had to point out to him and are still in you—you still really know how to fight if it is really necessary I reminded him, for he was a little Lord Fontleroy who was brought to me for crying frequently, and who could not take his place in the rough and tumble with other boys who imposed on him. He said that in a film he saw the trained animals were set free to be wild again: I agreed with him that in growing up to marriage that was again the case if fathers and mothers were to have children.

You will notice that in this sand tray the mother is represented on the left in two ways. There is in the hills the anatomical symbol of her breasts. There is also in the wild horses the emotional symbol of her motherhood, for, according to the psychosomatic theory, which I have given you, it is the mother's primitive duty to symbolize the animals which are important to the young. Though both aspects are important, you are already familiar with the first or anatomical symbolism, so I shall be emphasizing the meaning of the animal identification in this paper. Similarly you will be already familiar with the ambivalence explained by jealousy in the important oedipus complex,

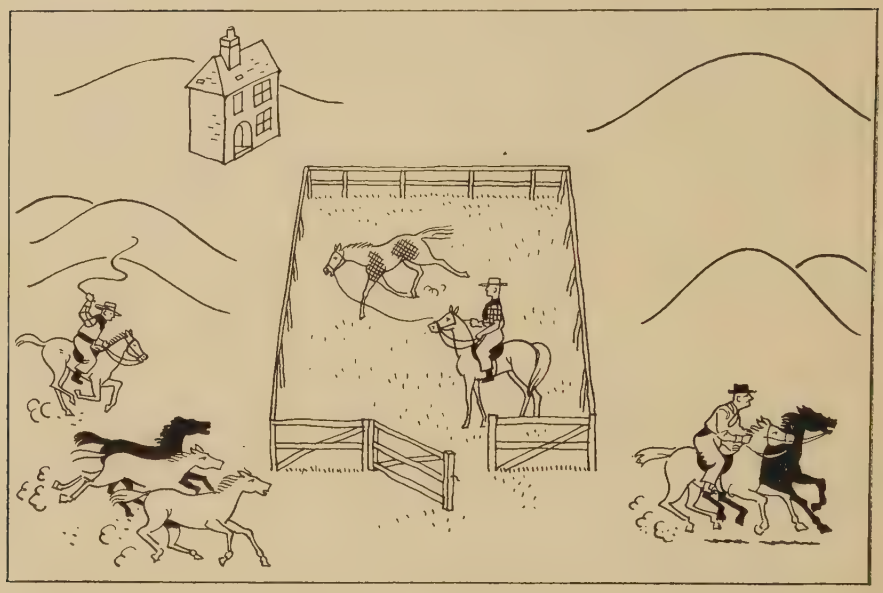

FIG. 1.

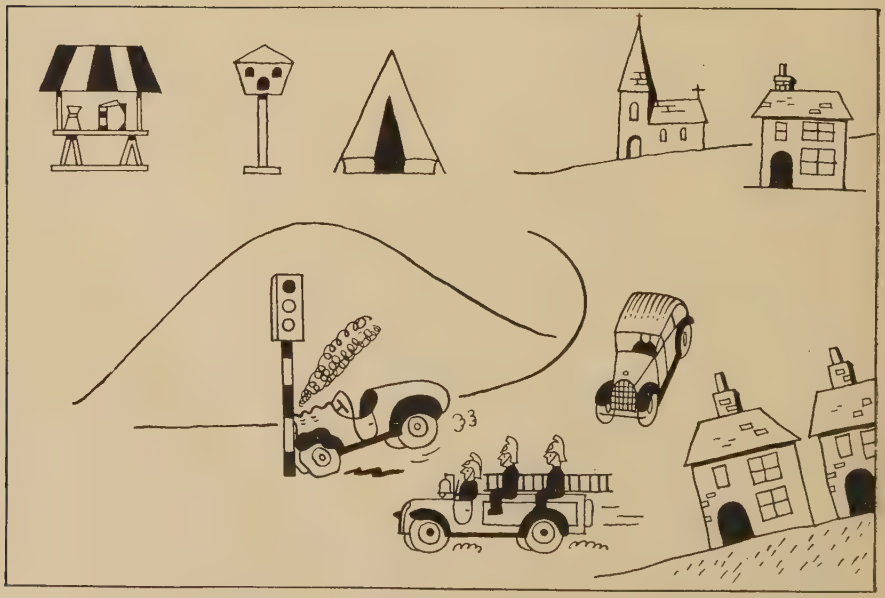

FIG. 2.

and so in this paper I shall lay the emphasis on the aggressive quality inherent normally in sexual love, even apart from sexual jealousy.

In most children who come for treatment the interpretation of their play is possible by the theory I have given you. Hence I shall refer to relevant aspects of several cases rather than tell you the whole story of one or two cases only. I should now like to show you pictures of two sand trays which, like the last sand tray, give the broad panorama of the field which I wish to cover in this paper.

They are by a boy, L. H—, who was brought to me on account of an inability to read, although he was otherwise a bright boy of 8½, I.Q. 100–125. The boy is in the car (Fig. 2), which has crashed into lights at danger and is on fire. He thought, he said, that there was a road on the hill side of the traffic lights, leading round to his sister in camp, where there was an aviary and a milk stall on which he insisted there was a book. My interpretation was that he was going to his sister and has got into trouble, and so has been brought to me. "Yes," he said, very pleased at my intelligence. His sister, I continued, could provide him with milk and a book—which stands for women—like his mother, who could give him milk and wisdom as a baby and now wishes him to get wisdom and learning from books. At the breast, I said, he learnt jungle wisdom, hence the aviary, but now he must learn civilized wisdom, and that will necessitate learning to read from the book. This scene was depicted on his first and second trays, and you will observe that I followed the practice of giving early interpretation. Much as I tried, however, to get off to a good start with interpretation I was yet too slow, for it took me eight more sessions before I tumbled to it that he was trying to tell me that the reason why he had not developed from what I have called learning jungle wisdom at the breast to putting the same emotions into learning from a book was because he was guilty about his sexual emotions—because from the age of 4 to 6 years, as he then told me, he had practised incest with his sister—yet he had told me at the very beginning in his sand tray (which was to explain his symptoms) that his car had crashed and burst into flames when on the way to his sister!

Before I knew why his emotions could not develop to reading he was giving me sand trays of coital significance such as this one (Fig. 3).

A fox is chasing chickens to kill them in an enclosed wood. Outside the wood is a desert containing wild animals hunting each other. A crocodile is about to enter a ditch containing a fish and two swans.

My interpretation was that the ringed circular wood represented the mother's vagina where the knowledge exists of animals who kill each other in real life outside the wood. Her vagina is adjacent also—the penis is about to enter. He knows as much as he needs about all this, and before he can do as his father does and marry and have children he must gain other knowledge, i.e. from books. He had been reported to me in the first place as being very restless at home and continually worrying his sister. I now told him that he need not worry his sister so much, that knowledge for the present was to be had by reading as they taught him in school.

I have already said it became clear that it was guilt for incest with his sister when he was 4 to 6 years of age which was obstructing the orderly development of his emotions and his learning, and I am pleased to be able to say that he was reading satisfactorily and behaving well after 14 interviews in 5 months. I wish to emphasize the manner in which he used animals and hunting and an accident to a car in order to draw my attention to his sexual difficulty, and I also wish to emphasize the manner in which I interpreted this animal identification and ambivalence.

I propose to choose sand trays which illustrate the various aspects of the theory I have put before you, and the use to which the theory can be put in the

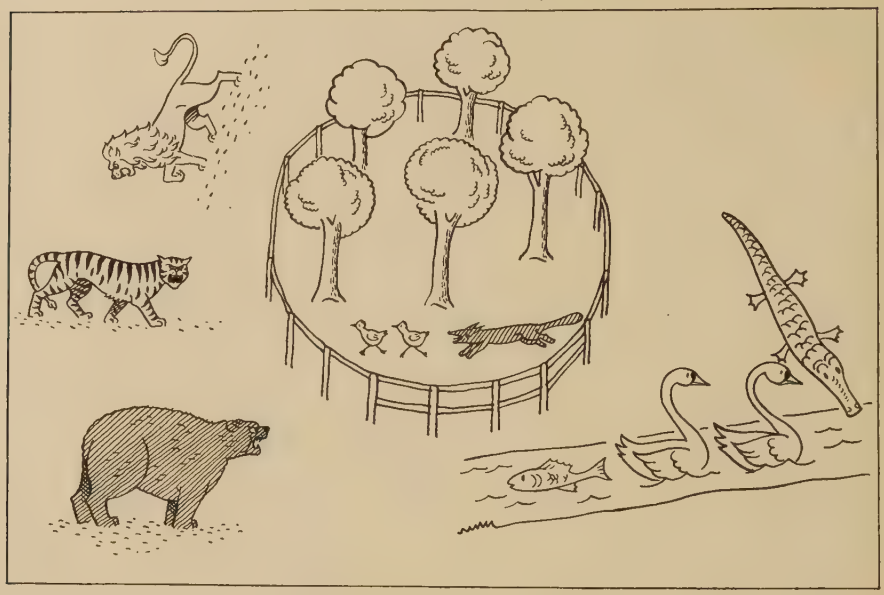

FIG. 3.

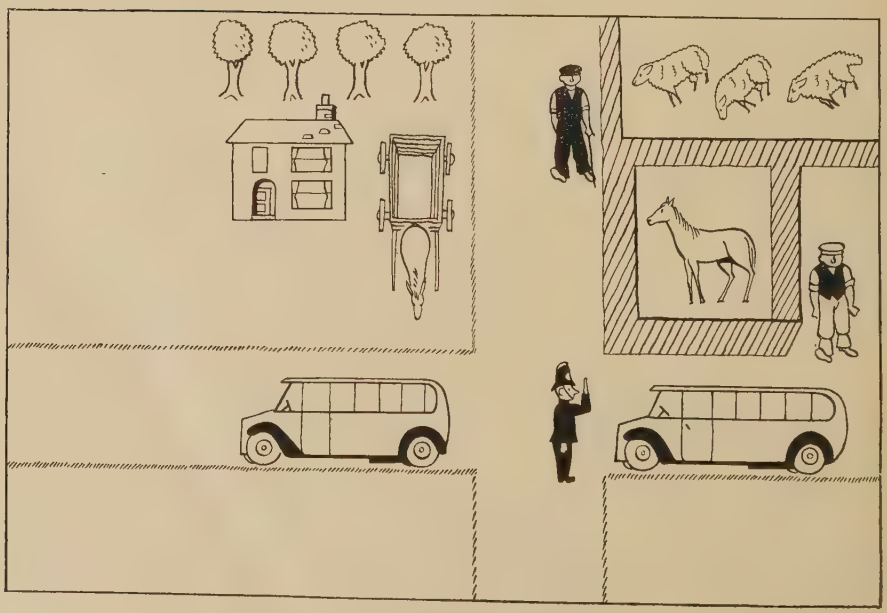

FIG. 4.

interpretation of play therapy. The aspects chosen are (1) animal identification; (2) the aggressive and fearful quality of sexual feeling; (3) the ambivalence of this aggression and fear with love and loyalty, and then the subject will be gone over in more detail by considering, (4) the goodness of killing the smaller species, and (5) the badness of being killed by the larger species of animal.

Animal identification.—The primitive sexual female role of animal identification is the symbolization of the animal environment, for the purpose of teaching the young, and for charging her mate, to address themselves to the environment.

Here is a picture (Fig. 4) of a sand tray which I interpreted by animal identification. The scene was made at the first sand tray of a boy, O. S—, 10·9 years, I.Q. 136, who was referred to me for stealing. I asked him to do a scene which would give an excuse for stealing (I often use this technique in an attempt to shorten treatment by drawing the child's attention frankly to the matter which we hope to correct, and asking for a sand tray scene which gives a real or imaginary explanation of the symptoms). He said that he was the tramp who walks along the road, passes a farm and wants to steal milk.

The history of the boy was that his mother, due to home difficulties, had placed him with guardians at the age of 3 months, but had kept in touch with him until her death when he was 9 years old. In the guardians' house were three women, his wife, sister and grown-up daughter, until the wife and sister died and the grown-up daughter developed hysterical paralysis. It is evident from the history that emotional deprivation was probably the cause of the stealing.

My interpretation of his play was that the boy wants his mother for her milk and for her love; the mother is the horse in the field; there is a fence around it; it is always so for all boys when suckling is finished; it is the same for all boys even if their mothers do not die. His mother went out of his life but there were three other women (the three sheep), and there is a fence around them. They also are inaccessible for milk, but he is, like all other boys, lovable nevertheless by the womenfolk, and he need not be shaken out of that conviction by the deaths or illness of the three women. Let him bide his time was my advice, for when grown up the empty cart and horse, unfenced, awaits him in marriage, when he has learnt of the world through schooling, etc. It appeared to me that he could have survived the present deprivation stress had it not unconsciously stirred the normal deprivation stress of weaning. I tried to correct his attitude to this, and was led to the point of view I took with him by the sight of the single fenced animal and the three fenced animals, portrayed by a boy who had suffered deprivation of one mother and three other women.

My next case is that of an extremely shy girl, D. I—, 11·6 years. She appeared to me to be a case of incipient schizophrenia. She was almost mute with me and all other adults, and had been so for some years, though with other children she was restless and mischievous. The parental history was a most involved one of bigamy and separation, and she had since been with foster-mothers and was, at the time I saw her, in an institutional home. Three years before she was brought to see me she had been enticed into the house of a neighbouring man to "play doctors." On one occasion something happened there which frightened this little girl and she ran home, but would not say what had happened; however, she persisted in undesirable play with other children, was seen with a younger boy attempting

FIG. 5.

FIG. 6.

sexual intercourse in a field, was often soliciting or threatening other children in the neighbourhood for the same thing, and neighbours naturally forbade their children to play with her. Whether she thought she was unjustly stopped from innocent fun I do not know, for as I said, she was practically mute. She was also unwilling to play, and after 10 sessions of apparent futility I gave the treatment up for the time being. However, the scene here depicted (Fig. 5) was interpreted in terms of animal identification, and afforded about the only instance of rapport which I had with her. She would not proceed, but stood stuporosely unless I handed her a toy model on the tray: if she wanted to use it she put it in the sand, if she did not want it she just stood with it in her hand until I took it and gave her another.

On the left is a street scene separated by a fence from a country scene. She would make no comment nor identify anybody. I took away three pieces of fencing and asked what would happen. She put some of the animals through the gap; a sheep was placed on its side in front of a bus—she said it had been knocked down but not killed. My interpretation was that the sheep was herself and the men and boys did not really "kill her" (i.e. have intercourse), but they were only messing about with her. To my surprise she looked up intelligently and said "Yes." Perhaps she was telling me that she was not as bad as she was painted; I do not know, for she again became inaccessible, yet I think it was significant that she showed a flicker of response when I likened her, in her sexual misbehaviour, to a sheep.

The aggressive and fearful quality of sexual feeling.—We now come to the closer study of the subject of sex being associated with ideas of killing and death.

A boy, D. Z—, aged 14, told me that he remembered that when, as a boy of 4 years, he saw his dead father in the coffin, he kept saying (3 times). "Take my father out of the wedding." His memory was that at 4 years of age when this took place he thought that his father was alive in the coffin and was going away to marry someone else. He believed his father was dead "when he had gone," but before that he had associated death with marriage.

My next case is more frankly sexual, for it was in the history of this boy, O. H—, aged 10 years, I.Q. 111, that he liked looking through bedroom keyholes at girls. He was referred for stealing, truanting and soiling. He was an adopted illegitimate child, who doubted whether he had ever been loved or that he had ever loved anyone. He was a cheerful rogue, and his play often showed ideas of sex combined with aggression. Besides himself his play usually centred round his mother, his father—whom he had not known—and a man he called his father's friend. One day these three characters were absent, but in their place was a car crash—he was standing on an upturned bus, and two other cars were close by. He confirmed what I took to be a coital theme, relating to himself his mother and the two other men by placing two tanks one on top of the other and saying that he had seen a married couple on the pictures continually "on top of each other." I therefore gave my interpretation of the car crash and himself on the upturned bus in terms of sex and its aggression. The next week I asked him to do a sand tray scene of a situation that would make him steal (Fig. 6). Twenty-one people were queuing up to pay threepence to view horses or cars, which were segregated behind high walls "that cannot be seen over." He placed himself outside the enclosure for horses and said he was going to steal one. I interpreted to him that horses are women, mothers, one of whom he has wanted, and that the cars are men. He proceeded to say that the women in the queue want a car and the men a horse, and each being mated up make trial of their purchases and have accidents and are left killed in the depression or ditch, and are all buried, except the boy and his horse, which avoid accident and death. It appeared to me that he had idolized love for himself and wished to avoid the aggression of love. I interpreted therefore that the dead are not really dead but in bed together, and will be all right to-morrow—that it always feels that way. He was very pleased with this and continued to play. I asked him, "What would your father say if he found you with that horse?" to which he answered, "I would not let him—I would run away and hide and get up in the night and come back." He was, as I have told you, a cheerful rogue.

I assured him that other boys of his age, even if loved and cared for by their own parents, cannot share in the fun or the associated duties he has depicted until they are grown up. He has not got to steal to be equal to them.

He was seen on 17 occasions, and he had been free from symptoms for some weeks before treatment was stopped.

An important stage in his treatment had been the interpretation of aggression in terms of sexuality.

A girl, I. G—, aged 13 years, I.Q. 122, had been referred to me after she had been brought before the Juvenile Court as being beyond parental control. It was the parental behaviour, however, which was primarily at fault, by giving the girl a false attitude to the normal association of sex and aggression. She was conceived out of wedlock and her parents would not otherwise have married. Her mother soon found out that her husband was an epileptic who had nocturnal fits. His wicked behaviour would always follow a fit. "I'd be asleep," she said, "and feel him make the sign of the cross on my chest and his hands would go up to my throat." One night when their girl had been telling lies to a shopkeeper to buy things on credit he went upstairs for her in his shirt only, but she hid in a recess in the bedroom; if he had found her that night he would have killed her, for "I would not have been able to restrain him." "I would always listen to see if he was getting a knife, or had fallen on the fire. One night he went downstairs at 1 a.m. and I and the children followed. He was nude and I made the children go upstairs, and I spoke to him and brought him round the best way I could. I never went too near because when he was like this he always thought people were fighting him. and if he got hold of me I would never get out of his grip. Sometimes after a fit he lies, calling the family vile names for two or three hours, and then he goes to sleep and the next morning he will not have it mentioned. He will insist regularly on sexual intercourse, and if I refuse him he goes into a fit. All the children know about his fits—they have clung to me in the night, but it makes no difference to him if there were a dozen children screaming; he told them of their rotten f——g mother."

I then saw the girl, who told me that a month previously her father had accused her falsely of stealing and beat her on the head and back when she obeyed his command to fetch his clothes. The girl described his tempers to me: "He wakes us all up, shouts like a madman, swears—his language is awful. One night when mother was at night shift he nearly broke the dog's neck. One Sunday afternoon he had mother on the sofa and nearly strangled her. I saw it. Another time in the bedroom he nearly strangled her. I thought he was going to kill her. Once he went downstairs and brought up the carving knife, and I ran into their room and saw he had it near mother's chest and she was trying to get up, but couldn't get up; we screamed, and my sister hit him and he started crying; on other occasions we have heard them nagging and gone to sleep."

It is not surprising that as the girl told me this she wept and said she would never marry and did not want to get married. She wept "I would not like the life my mother has had—I think I would be sure to get as bad a life." I assured her that did not follow, but that it was certain that she would find, like everyone else, that there was a normal association of sex and violent emotions. I explained to her the theory of family sexuality which I have told you, and by telling her of the normal significance of what her father was so unfortunately misunderstanding, I endeavoured to restore her faith in the natural order of things.

That was the first time I saw her and I did not see her again for two years, for I advised forthwith that she be removed from the home environment, and the School Psychological Service arranged for her entry to a suitable residential school. While she was at the school the girl sent me a short letter occasionally, saying how happy she was and how well she was getting on. Unfortunately her mother insisted, and now regrets, that the child should leave the school too soon, and she returned to the unstable family environment. There are, naturally enough, still some difficulties ahead, but on the two occasions I have seen the girl since she left the school I was pleased to notice that the bitterness of her rejection of the institution of marriage and the family was less, and there was discernible some increasing sweetness and hope in life, which I am sure would have been impossible unless

she had accepted a possible normal significance in the combination of sex and violent emotions.

I have, therefore, given you some demonstration of my interpretation to the children of the association of sex with aggression and fear. Next to be described is the interpretation of the ambivalence of aggression or fear with loyalty and love.

Ambivalence of violent emotions and love.—I often find that mental illness is due to a misunderstanding of this normal ambivalence of love with aggression and fears. Instead of sublimating this primitive emotion with love it becomes separated from love; and this separation may be due to circumstances of birth, to current emotional difficulties of the children with their parents or to accidental factors.

A boy, A. H—, aged 14 years, I.Q. 107, was referred to me after he had committed a sexual assault upon a girl of seven years. He was an illegitimate boy who was not brought up by his parents, and so in all his ponderings of his parenthood he would be confronted with a situation of a separation of primitive emotions from love in his parents. He did not take kindly to his foster-mother. When I interviewed her I found that she was perfectly "correct" in everything she said about her treatment of the boy, and yet there was one thing lacking, for she failed to give the impression of love as apart from duty in caring for the boy. The boy expressed similar sentiments to me. He did not mind her strictness, he understood punishment, but he did not like her. The normal ambivalence was, therefore, broken up, and he could not benefit from her punishment of him because he did not love her. I have said that he was referred to me for committing a sexual assault upon a little girl. He did not know the little girl, he did not care for her, and I pointed out to him that he was repeating the error of his parents and of his foster parents. He had expressed himself aggressively but without love, and he was advised that the unspoken pledge of the sexual act he attempted is loyalty to that person, and that he should not therefore be tempted to use the act unless he means that pledge. The interpretation gave him an appreciation of his behaviour, which was otherwise inexplicable to himself.

A girl, S. K—, aged 15 years, I.Q. 77, was referred by the Probation Officer for thefts and truancy. When the girl was five years old her mother had had a legal separation from her father on account of his cruelty. He had another woman also, but he would not thereafter leave the girl's mother alone. The girl well remembered the father hitting the mother, yet until this sort of thing started she had loved her father and thought there was nobody like him, and had delighted in the thought that she was supposed to be the image of him in looks. Now, however, it was becoming difficult for her to associate aggressive and fearful feelings with love, for her father was so misusing the primitive aggression. She told me that when they, as children, first saw their father hit their mother they screamed and kicked him, and he said, "I thought you loved your daddy"—ambivalence of violent emotions and love was being strained. Once when he hit her mother on the ear the latter fainted, and the little girl thought her mother had died and ran out and told the neighbours. The little girl thought her father might kill her too. So she used to ask her grandmother "what it would be like when you're dead," and was told not to ask questions. So she asked a neighbour, who said "You go to play with the angels when you die—the angels dance and play with toys and fly about." After that the little girl did not bother if her father did kill her. Ambivalence of aggression and love was therefore preserved, though distortedly. The little girl thought it was lovely about the angels until, sadly, at the age of 9 years she found it was not true; it was no longer possible for her to accept her father's aggression with any conception of love or even loveliness, and it was then, at the age of 9, that her symptoms started. Referring to her stealing and truancy she said to me, "I often feel if I had a father I wouldn't be doing these things." And her father would still have been with her if he too had not failed to sublimate the normal association of primitive love and aggression. She was seen on nine occasions,

and I have had a good report of her behaviour in the subsequent two years from the Probation Officer.

A boy, L. H—, aged 4 years, was referred because he screamed if he did not get his own way and because of bed-wetting and dirty habits. He was a well-developed young boy who had appeared to be normal until the arrival home from the war of his father. He resented the father and screamed at his slightest advance. During the course of five sessions of play therapy and interpretations he played out the œdipus situation and his jealousy of the father and came to accept his position in the eternal triangle. It was characteristic of his play that it all took place on the floor, except that his father was killed in many different ways in the sand tray. The play on the floor consisted of scenes of the boy and mother together. It was my aim to fuse in him the violence he showed with regard to his father and the love he showed for his mother, and thus to establish normal ambivalence. When, therefore, he caused his father on the sand tray to be eaten by a fish, I interpreted that his mother was the fish (i.e. by animal identification) and that they were doing this for him (thus establishing the ambivalence of aggression and love). He poured water over the scene and I told him it was all right to pretend to join in or to pretend to displace father with mother, but of course he could not join in really. At the end of these five weekly sessions he was free from his symptoms of wetting and dirtying and screaming, and again seemed a normal little boy. Yet six more sessions were devoted to his parents, for he was a sad little boy. His father was often in a bad temper and gave either the mother or the child a bad time, and his father had told him that he did not love the boy. The father was finding it difficult to settle down after returning from the army, and was also allowing his own jealous mother to persuade him that the boy was not his own. She wanted the father to leave his wife and son and return to her. I had to point out to the father as well as I could that he was allowing his mother to make him very cruel to his family. An attempt was made to combine the discipline the father exerted on the son with love again, and thus to establish normal ambivalence in the case of the father, as had been achieved in the son.

In the next case the dissolution of normal ambivalence was due to an accident. A girl, A. N—, aged 15 years, I.Q. 70, had been treated on and off for three years by another doctor and then by myself, personally and in a group without much success. When she was five her brother shot her in the eye accidentally and she wore a false eye. She showed none of her pronounced symptoms of instability, however, until she was 12. She then said that people were sneering at her having lost one eye. She developed violent tempers. After I had seen her for twelve interviews she was saying to her mother that she dreaded coming to see me because I knew too much of her business. However, on the 13th visit she told me that she often thought her parents caused her "one eyedness" on purpose, and that she hated them and would like to kill them. Ambivalence for her parents had obviously broken down and aggression was dissociated from love. She said that she would not have minded so much if she had been left the blind eye, but she objected to the false eye. Now this was a curious thought of hers, and I wondered what it had to do with her loss of ambivalence and her dissociation of sexual feeling from love. Her sensitiveness to the false eye had come with puberty and I knew she was becoming abnormally interested in men. I therefore explained to her the psycho-somatic theory of family sexuality, and stressed this aspect, that the woman does not express herself, but the animal or other object of interest to the family—"You see," I said to her, "a normal woman when she loves is not showing herself—it is as if she has a false eye; I want you to think of your false eye as representing your womanhood and sacred love." I saw her again the next week when she was calm and accessible, and three months later the psychiatric social worker got a report from the mother that the girl was very much better. The mother said that prior to the interview which I have described, the girl "had not got a good word for Dr. Turner, but something happened at that interview, and she now speaks very highly of the Clinic and Dr. Turner." I concluded that, by accepting her false eye as standing for love and her normal sexuality, she had had her normal ambivalence for her parents restored to her.

It now remains to explain the interpretation of the two primitive interests which are demonstrated in sexuality. The act of coitus may be considered in

two parts, that before and that after the orgasm. These two parts represent respectively what is good and evil in life. The first part has to do with hunting a smaller species for food—that is good : the second part has to do with being hunted by a superior species for food—that is bad. The first is to be desired ; the possibility of the second has to be freely accepted. It is the misunderstanding of one or other of these functions which is often, I find, to be corrected by the interpretation of the child's symptoms. These same attributes of the sexual acknowledgment of good and evil are also present of course in suckling, but do not there appear to be differentiated so obviously as in coitus.

Killing smaller animals.—I shall speak next, therefore, of the misunderstanding of the good that is intended in the sexual portrayal of the killing of an inferior species by humanity.

A girl, O. C—, aged 7·9 years, I.Q. 100, was referred to me because she had a morbid fear of dying and she also had a vaginal irritation. She told me that she got this fear of dying if her mother goes out of the house—that is to say, if she and her father were left in the house. Should her father leave the house as well and go out with her mother, the little girl had then no fear of dying but feared that her mother, whilst out with father, would be run over.

The sexual symbolism of this was apparent to the little girl, and she admitted to it when her confidence was obtained. She was reassured of the naturalness of her love for her father : it was explained to her why her feelings showed themselves as a fear of dying : and she was told that she can quite happily leave this side of the question while she develops as a normal girl with her schooling and home life. The School Psychological Service had, as always in the cases referred from the department, given me a full report already, and the interview I have just described was the only occasion I saw the child. She seemed to understand the position clearly, and a few weeks later I asked how the little girl was progressing. I was told that she was quite all right and had lost all her fears of dying.

Another girl, O. T—, aged 15 years, who had been before the City Juvenile Court for stealing a clothing coupon book, was referred by the Probation Officer, who wrote, " There is something I feel I cannot understand about her." The girl had left or been dismissed from ten jobs in a year. She told me she lost her jobs on account of " nerves," and she attributed being frightened to being burnt when five years old. Her mother had told her that the doctor had said at the time that it would have effects at the age of 14 years. The burn involved the skin of the left breast, the left loin and groin. Her fear consisted of the idea of men getting hold of her in the dark and killing her. This fear was preventing her taking her place easily in life ; for example, she gave up smoking in case it led to friendship with men and then to babies. She appeared to think herself unfit for marriage, while at the same time wishing to be ready in due course for it. Her normal emotions thus frustrated showed themselves as a morbid fear of being killed by a man. It only remained to examine her physically, establish the fact that the scars were no impediment to motherhood, reassure her of this and explain to her why she could accept her good feelings of a man killing her, but to make them a wish and preparation for the future when she would be married.

A boy, B. H—, aged 15 years, was referred to me because of his violent outbursts at home for the last 2–3 years. His mother told me he would have periods of great excitement, when he would frighten her by threatening violently to punch her, and afterwards he would say he only did it to torture her. If his father had been angry with him, he would wait till his father had gone to work the next morning and then would stand over her in bed and say, " What are you going to do now father is not here ? "

The boy told me, when asked, that he did not like changing into a man at puberty, and I explained to him that it was these good feelings repressed which had burst forth in violence towards his mother. He was told that he could use his legitimate cave-man feelings in a more gentlemanly way, and that instead of feeling, as he did, that his mother was not spoiling him enough, he should take a

man's part in reassuring her, especially as she was " nervous." The nervousness of the woman would still arouse his aggression, as primitively it should do, but instead of using this aggression mistakenly in threats of violence to his mother, or actually in intercourse with his mother, which is, of course, forbidden, he could express himself by growing up decently and thus reassure her.

The next case shows a complete contrast in the reaction of a boy to the same emotions. B. G— was a boy of 7·4 years, I.Q. 89, who was referred to me for being dull and backward. His mother had said he would neither eat nor play. It would not surprise you to know that such a quiet little boy was inhibiting strong emotions. He did indeed tell me in his first interview that he hated his mother and hated his sister, and he was then angry with me for obtaining his confidence. He did not indulge his primitive sexual instincts of love in misplaced violence as did the previous boy, but on the other hand he also was unable to sublimate his emotions into the normal affectionate aggressiveness of a boy of his age.

Killed by bigger animals.—I now come to consider that aspect of the emotions of sexual relationships which considers the danger to the family of destruction by animals of a superior species.

A boy, F. H—, aged 11 years, I.Q. 146, very nervous and with so-called abnormal fears was referred to me for treatment. He would not go upstairs alone even in the daytime; he dreaded, e.g., that he would come across a dead body—he was fascinated by fears of death. At his first sand tray he was left to his own devices, but at the second he was asked specifically for a sand tray scene explaining his fears. He did this scene (Fig. 7) of a boy about to be attacked by a man with a

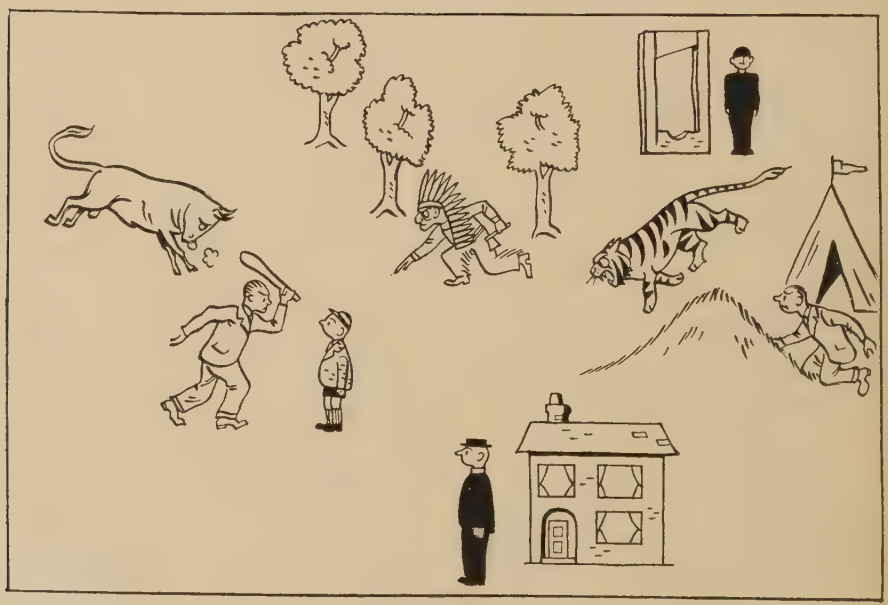

Fig. 7

weapon, a bull, a Red Indian, a tiger which is friendly with a deformed " ghost-like " man and by the latter himself. The boy also feared being taken to the guillotine. The clergyman was not just the peaceful figure which he appears in the picture, for the boy said that when he is only a yard off the clergyman will change into a wicked man or ghost and kill the boy. The boy said that these things often happened in his dreams and he wakes up as he is about to be killed ; in

daytime he often fears these things may happen to him, especially when it is dark. I deduced that these fears were a misunderstanding of his normal sexual feelings for the superior species, and told him to imagine that he can be killed an infinite number of times within the limits of the sand tray and he will always come to life. He proceeded to imagine them all, one after the other, killing him, and in each case he came to life, " with enormous power " he said, and killed them by hitting, leaping on or rolling on them, crushing them with boulders, etc.

He was then told to imagine that all the wicked men and animals can also come to life an infinite number of times. Numerous individual combats then occur, each side being killed in turn and then he passes on to the next combat. My interpretation was that his fears were sexual feelings, that actual death cannot come by these feelings, and that, therefore, they need not trouble him. After his first few visits his mother told me he was very much better, and it was only necessary for him to attend on nine occasions.

My next case was able to make the principal adjustment to her difficulties before her fifteenth session, and by the twentieth session she was discharged, recovered from suicidal impulses, hysterical outbursts and moodiness. I. V— was a girl of 11 years, I.Q. 120. Her parents had separated when she was six years old, and the father, who had left the home, subsequently remarried. The girl led up after several sand trays to say that she had a bitter hatred of and desire to kill her father, but it was evident that this represented an underlying frustrated love for him. Fortunately she was able to see this, and came to accept a normal significance for her, a girl, identified with the superior species, wishing to kill her father for the sake of love. This was the turning-point in the treatment, and her outlook became much sweeter and her mother reported that the girl was very much better. It was then possible to pass on to seeing a normal significance in her suicidal impulses —it was again a question of frustrated love, but it was easier for her now to accept this. At her next sand tray she depicted her father watching her play hockey. She put her father's car on the hockey field near her ; I put her on it ; she laughed and put herself prone in front of his car, and enjoyed me sending the car running over her. Her suicidal impulse had been the expression of a primitive invitation to love. She could accept it now for she had already accepted her desire to kill her father as a desire for the climax of love's sexual demonstration. It is a relief for an emotionally tormented child to understand these things. Her mother told me that the girl was happy and laughing for the first time and enjoying school.

My last case is a slight one. I only saw this boy, A. L—, aged 8 years, once. His mother described his extreme nervousness ; little things annoyed him and he wanted to cry and scream. Unlike his brothers and sisters he was extremely affectionate towards his mother, liking to be petted and kissed, and she would then make a great point of telling him there was no cause for fear. This was absurd, for his history gave him ample reason to expect fear in life. He had been circumcised at 18 months, had his tonsils removed at three years, had an accident from a motor cycle at five years and spent six unhappy months in a convalescent home, and at seven years he had been in the London blitz and the family was evacuated to a strange town. I advised the mother that in cuddling and consoling him she should appreciate that this aspect of motherhood is to reassure the child that life is possible in spite of very real causes for fear in the world, and not to hoodwink him that there is no fear. I had in mind, you will now know, that the mother in these circumstances would, to teach the child, be identifying herself unconsciously with the superior species which the child should rightly fear, and that the boy must accept the fear of such animals or their civilized equivalent fear. I had the following short conversation with the boy :

> What was the blitz like ? Fires (timidly).
> Were you frightened ? Yes.
> Are you still alive ? (in wonderment). Yes (amazedly—the thought did not appear to have occurred to him before).
> Were you frightened at the convalescent home ? Yes.
> And you are still alive ? (in wonderment). Yes (in quite cheerful mood by now).

I was trying to show him that life, in spite of knowledge of fear and death, can be possible and cheerful.

The use of the theory of family sexuality in the interpretation of children's play shortens the treatment. I know that several analysts are not aghast at 200 sessions for one patient, but it is my custom, if I have not cured the child, or at least obtained a marked improvement of symptoms before the twentieth session, to consider that I have failed or am failing. To-day I have told you of several cases in which a straightforward interpretation by the theory has assisted in the recovery from symptoms, and has also, I hope, done something towards laying a sound emotional foundation for the children. Such a simple application of the theory is not always possible. Life has very complicated aspects, but it has to suffice us if, from time to time, we can take one step forward.

I wish to thank Dr. T. W. Davidson, Medical Superintendent of the Towers Mental Hospital, for permission to publish the case material of the Francis Dixon Lodge Child Guidance Clinic. It is also my pleasure to thank Dr. Agatha Bowley for her Psychologist's Reports on the cases seen at or referred from the School Psychological Service of the Leicester Education Department, also the Leicester Probation Officers for their assistance with the cases referred from the Juvenile Court. Finally, my thanks are due to Mr. M. Pownall for his skilful drawings of the sand trays.

Bibliography.

Klein, M. (1932), *The Psychoanalysis of Children*, p. 46. London: Int. Psa. Lib.
Lowenfeld, M. (1935), *Play in Childhood*, p. 49. London: Victor Gollancz, Ltd.
Turner, C. E. H. (1947), "The Psycho-somatic Sexual Life of the Family, *J. Ment. Sci.*, **93**, 522.

OBSERVATIONS ON THE USE OF TRIDIONE IN DISTURBED PSYCHOTICS.

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Tridione (Abbott) is 3.5.5-Trimethyloxazolidine-2, 4-dione, and has been demonstrated clinically to have an inhibitory effect on *petit mal*, myoclonic and psychomotor seizures in epilepsy. Gibbs, Gibbs and Lennox first demonstrated a similarity between the cortical dysrhythmias in certain cases of schizophrenia and those of psychomotor epilepsy, whilst Kalinowsky and Putnam, as a result of these findings, gave the anti-convulsant dilantin as a successful sedative to 60 cases showing mental symptoms. Since tridione has a specific action against psychic equivalents in epilepsy, it was thought that its administration to patients showing chronic mental disturbances might result in at least a similar improvement.

Ten cases were chosen from a disturbed male ward, who were physically fit and between the ages of 20 and 49 years ; they had all had previous treatment without any appreciable prolonged improvement, and their average duration of illness since admission was 58·4 months.

Haemoglobin, red and white cell counts, erythrocyte sedimentation rates, blood urea and urine examination were normal in all the patients. Weekly full blood counts were made in all cases, and also on ten similar controls throughout the time of the observations.

The sedatives they were having were withdrawn, and two days later Tridione was given in doses of 0·3 Gm. twice daily to each patient ; after seven days this dose was increased in frequency to three times daily, and after a further 21 days to four times daily. The drug was given for an average of 98 days, the mean dosage being 106·2 Gm. at the end of treatment, or 1·08 Gm. per diem. In seven cases the drug was withdrawn abruptly, and in three cases gradually ; all the patients were carefully observed after cessation of the treatment.

It is obviously not possible in this small series of patients to discuss the relative merits and results of Tridione therapy in individual diagnoses, but some general results and comments on the effect of Tridione in cases of chronic mental disturbance seem to be worth recording. Clinically it was noticed that very little added sedation was required during the period that Tridione was given, only four patients needing additional paraldehyde, and then only in a total of 10 two-drachm doses in the whole 96 days of treatment ; previously six of the ten cases had been on paraldehyde, two drachms three times

daily, and three of the remaining four had needed the drug at intervals. It would thus appear that Tridione has, in common with other anti-convulsants, a general sedative action, and that in this series its value was at least the equal of paraldehyde.

One patient has now worked willingly and well in the ward for a period of seven weeks, whereas previously he had not been known to do this for longer than a few days at a time, and then grudgingly. Another patient had repeatedly smashed windows because, he said, he preferred his bed and broke the windows because he knew he would be returned there : after having had Tridione for 41 days he asked to be allowed to get out of bed, and he has remained up with no more impulsive outbursts. A third patient now openly admits and talks freely about his hallucinations ; before, though they were obviously present, he had vigorously denied their existence. In these cases it would appear that Tridione, as well as being a sedative, also affected their behaviour. It was noted by Merritt and Putnam, Lennox (1940) and Blair, Bailey and McGregor (1939) that Dilantin was specific for psychic epileptic equivalents, and these findings have been in part related to the alteration of behaviour patterns.

Following the Tridione alone, six patients had courses of electro-convulsive therapy (E.C.T.) with an average of seven convulsions, combined with Tridione in a dosage of gm. 0·3 four times daily. As a result of this treatment a further patient who had always been solitary, and often noisy and violent, became quite sociable and agreeable. Another patient, after 2 E.C.Ts., became quiet and subsequently depressed, though on all previous occasions following E.C.T. he had become abusive, aggressive and violent. Both these patients had previously had other sedatives and E.C.T. when necessary, but had never responded in this way before. It was found that the current had to be slightly increased to produce the fits.

In six of the ten cases in which Tridione was given, the pulse-rate was noticed to fall by about 5–15 beats per minute after the drug was commenced, whilst the same change occurred with the subsequent increases in the dosage, but there was always a return to the usual pulse-rate in 1–3 days and there were no cardiac dysrythmias. The small fall in the pulse-rate is interesting in view of the fact that one of the toxic symptoms of Tridione, namely the " glare phenomenon " in which all well illuminated objects appear " as if covered with snow," has also been noticed occasionally by Carroll (1945) in digitalis therapy, but with Tridione the pulse-rate returned quickly to normal and there was no tachycardia when the drug was withdrawn.

After a total dosage of 97·2 Gm. of Tridione over a period of 91 days one patient developed a pyrexia reaching 99·2° F., but nothing abnormal was found on repeated physical and pathological examinations beyond a slight reddening of the tonsillar beds and fauces. Tridione was continued and he was observed carefully, but he recovered enough to be allowed up in a few days without specific treatment ; his white cell count has since remained normal. Except in this one case none of the toxic symptoms mentioned in the literature, such as the glare phenomenon, skin rashes, or nausea and vomiting were noticed.

Pathological findings showed an average leucocytosis following the initial doses, which gradually fell to the level of the average leucocyte count of the

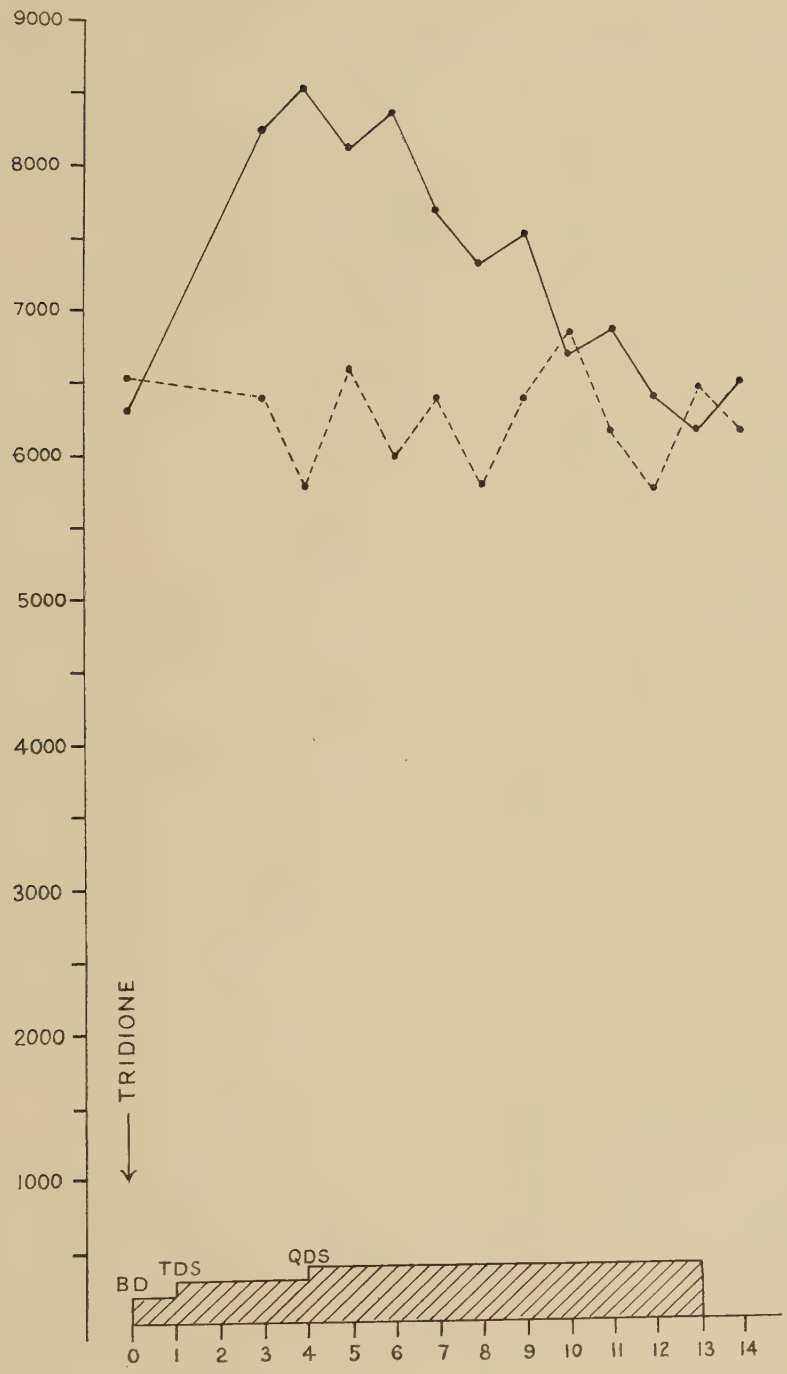

FIG. 1.

Straight line: variation during treatment.
Dotted line: variation of controls.
All values represent averages calculated from 10 cases.

ten controls at the end of three months, as shown in the accompanying graph. An eosinophilia was also pronounced in four patients, one differential count reaching 14 per cent.; this was also observed by Lennox (1947): there were no significant changes in the red cell counts, haemoglobin, blood urea or erythrocyte sedimentation rate in any of the cases. A leucocytosis and eosinophilia concomitant with Tridione therapy was described by Robinson, who attributed the findings to proved infestation with common intestinal parasites. In this series, however, the rise in the average white cell count is so marked that it deserves special mention from two aspects: first, that although the early readings following the administration of Tridione are well above the level of the counts in the controls and remain raised for twelve weeks, they are still within the limits of normal values; secondly, the patient's counts fell to the level of the controls in three months. This may be of significance in that two recorded deaths in America following Tridione from aplastic anaemia with agranulocytosis (Mackay and Gottstein, 1946), and aplastic anaemia alone (Harrison, Johnson and Ayer, 1946) occurred only after ten and six months respectively, suggesting that the blood counts after the first three months may be more important than those made during this time. Non-fatal cases of granulocytopenia have been recorded by Lennox (1947) and Greaves (1946), and a death from agranulocytosis, probably attributable to Tridione, in a child of ten years taking four tablets a day has recently occurred in this country.

In conclusion these observations suggest:

(1) That Tridione can successfuly be employed in psychiatric treatment, not only against certain types of epilepsy, but as a sedative, and that it may modify the pattern of behaviour.

(2) That Tridione combined with E.C.T. may in some cases be more successful than the combination of E.C.T. with other sedatives.

(3) That it would appear that a leucopenia, if occurring at all, is more likely to be found after the first three months of treatment.

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References.

Blair, D., Bailey, K. C., and McGregor, J. S. (1939), *Lancet*, **2**, 363.
Carroll, F. D. (1945), *Amer. J. Ophth.*, **28**, 373.
Gibbs, F. A., Gibbs, E. L., and Lennox, W. G. (1939), *Amer. J. Psychiat.*, **95**, 255.
Greaves, R. J. (1946), *J.A.M.A.*, **132**, 44.
Harrison, F. F., Johnson, R. D., and Ayer, D. (1946), *ibid.*, **132**, 11.
Kalinowsky, L. B., and Putnam, T. J. (1943), *Arch. Neur. Psych.*, **49**, 414.
Lennox, W. G. (1940), *J.A.M.A.*, **114**, 1347.
Idem (1947), *ibid.*, **134**, 138.
Mackay, R. P., and Gottstein, W. K. (1946), *ibid.*, **132**, 13.
Merritt, H. H., and Putnam, T. J. (1938), *ibid.*, **111**, 1068.
Robinson, L. J. (1947), *J. Nerv. Ment. Dis.*, **105**, 661.

THE USE OF MUSIC IN GROUP THERAPY.

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Historical Introduction.

Pythagoras appears to have been the first to recognize "the profound effect of music upon the senses and emotions." He tried to influence the mind and body with what he termed "musical medicine" (1).

He declared that the soul could be purified from its irrational influences, and he made detailed investigations into the therapeutic value of the seven different Greek keys. Pythagoras is said to have cured many mental illnesses "by having certain specially prepared musical compositions played in the presence of the sufferer." For example, Iamblichus, in his life of Pythagoras, relates how he devised certain melodies against despondency, others against anger and still others against desires.

Pargeter, an English alienist of the eighteenth century, seems to have been the next to use music on a scientific therapeutic basis. He systematically studied its effects in cases of mania (2), and emphasized "that a considerable knowledge in music will be requisite to select those compositions and instruments and that arrangement of the instrumental parts as may exactly correspond with the *pathos animi* . . . this must be regulated by the feelings of the patient, which may easily be ascertained by attentive observation to the modulations and style of composition." In this Pargeter closely follows and elaborates Pythagoras's plea for a specific music therapy.

After this there appears to have been no notable work on music in psychiatry until the present century. Many interesting studies have recently shown its value in individuals and large groups of patients.

Music has been applied as additional treatment on disturbed wards (3). It has also been used in the resocialization and rehabilitation of other mentally ill patients, including convalescents (4), (5), (6), (7), (8).

Some writers were more concerned with investigating the effects of different types of music on different types of patients (excitable or quiet). They centred their attention on alteration of moods, release of energy and improvement of concentration and interest. They gave useful recommendations in a

non-specific way, basing their therapeutic approach more on descriptive than psychodynamic principles (8), (9).

Tilly's work on analytical lines stresses masculine and feminine neurotic qualities in musical compositions and in composers, to which she considers listeners are likely to react according to the strength of the respective qualities in themselves (10).

As in recent years there has been an increasing interest in group therapy, especially in small groups, music therapy has been included as an additional aid. Several writers (11), (12), (13), (14), dealing with this new aspect, appear to apply the principles previously mentioned, with little systematic differentiation of musical styles and clinical disorders.

There have been a number of valuable contributions by professional musicians on the psychological aspects of music, such as Hanson in America and Howes in this country. These are closely allied to our main subject (15), (16). Hanson, like Plato and Damon of Athens, Socrates' musical tutor (1), points out the powers of music "for good and evil." He emphasizes how, "when through the radio the country is literally flooded with sound, it seems reasonable to assume that music is destined to play an important part in helping to preserve mental sanity on the one hand, or, if misused, to add to the emotional strain of an age already over-taxed by disruptive forces."

Aims of Present Approach.

Entertainment, recreational and educational aspects were first in the foreground as part of the general activities in our hospital. Monthly concerts were given by professional musicians under the auspices of the Council for Music in Hospitals. There were gramophone record programmes of serious and light music twice weekly. Also attention was paid to earlier work by others in disturbed wards, and music was played to refractory patients at bedtime with the aim of quietening their general conduct and improving their sleep.

Like others, we applied so-called stimulating and sedative music. We found such classification unsatisfactory, as patients were often not soothed or stimulated by the respective pieces. In fact, with programmes of purely sedative music lasting more than half an hour, patients became irritated and started fighting. Mixed programmes were unquestionably more appreciated, and produced temporary beneficial effects on moods, as with normal people. There was no noticeable effect on sleep.

These general, more superficial, but none the less valuable forms of musical approach, which are still being applied in our hospital, we would hesitate to call specific Musical Therapy.

In order to study the latter, we restricted ourselves to a small group of patients, and concentrated on music as a method of group therapy, analogous to other arts, such as painting and psychodrama.

We wished to observe how far the emotions aroused could be experienced in common. We encouraged self-expression and insight, and aimed at the improvement of interpersonal, including doctor-patient, relationships.

These aims were fostered by discussion and interpretation. Our intentions were therefore essentially the same as those of many other group therapists (17), (18), (19), (20), (21).

What advantages does music have over the other arts? Perhaps music allows the most indirect form of emotional release, while painting, and especially poetry, are more direct methods of self-expression. Also a number of patients are more interested in music than other forms of art. We therefore wondered whether through music, inhibited patients would be helped to overcome their lack of ability to express their emotions. Similarly, the uninhibited types might obtain better emotional control and integration.

We decided to study reactions to different styles and periods of music, particularly Classical, Romantic, Contemporary and Folk Music. A subsidiary classification into personal and impersonal music proved helpful in differentiating various reactions.

These distinctions were based on the views of Howard Hanson. He emphasizes the highly formalistic structure inherent in the Classical age. He contrasts this music, which is only secondarily emotional, and has a somewhat impersonal, cosmic character, with the Romantic school of composition, where emotion is more intensified and personalized. He suggests that "the expression of emotion in music seems to be bound up in the contrast between dissonance and consonance, the former producing a sense of tension and conflict, to be either heightened by progression to a sonority of still greater tension, or resolved by a succeeding consonance." Accordingly we decided to see how far we could release emotion in Romantic music, and how far this might be the mode of choice for affective and non-affective types. The modern Impressionistic school (e.g. Debussy, Ravel) with its descriptive moods provided a further field of observation. We also studied the effects of the more complex, dissonant and rhythmically irregular twentieth century music (e.g. Stravinsky, Gershwin, Shostakovich and recent Jazz composers), which seems to revert to primitive or pseudo-primitive forms. In addition, we played examples of the contemporary atonalists (e.g. Berg, Bartok, Hindemith), and finally investigated the response to traditional songs and folk music.

Methods of Approach.

(1) The setting chosen was a small hospital library. Occasionally the main hall of the hospital was used for large-scale works, e.g. Messiah, certain symphonies.

(2) The number of patients was kept nearer 12 than 20 and the basic structure did not alter.

(3) Members of both sexes with a variety of syndromes were selected, e.g. neuroses, schizophrenia, paranoid states, manic-depressives. The patients were mainly young or middle-aged adults.

(4) Sessions were held once weekly for an hour. Occasionally an extra session was held when members wished to listen to a single long work again.

(5) A gramophone with pick-up was used, and was supplemented occasionally by active participation of the group in a percussion band or singing traditional and folk songs.

(6) Records were chosen to cater for all tastes and schools of composition ; the details will be given later. The Arts Council lending library proved most helpful in supplementing our Hospital record library.

(7) We purposely introduced entertainment music each time in the early stages, without stimulating discussion, to avoid boredom.

(8) Our work commenced in July, 1947 ; after a few months we decided to introduce a monthly lecture-recital in simple terms, illustrative of the historical development of music. It was felt this would increase appreciation and so improve the effects of group therapy.

(9) Patients were asked whether they liked or disliked each piece and to give their reasons.

(10) It was also noted whether any special emotions or thoughts were provoked.

(11) Group discussions followed, not only directly concerned with the music, but also with any problems, personal or general, which arose.

Observations.

The solid core of the group consisted of some 14 patients. There were almost equal numbers of inhibited and non-inhibited. This term is to be understood as implying approximate differences in constitutional reactions.

The inhibited included schizophrenics and neurotics, mainly the former. The non-inhibited were represented by manic-depressives and paraphrenics. Although there is disagreement among psychiatrists on the subject of paraphrenia, our cases were undoubtedly affectively labile and showed marked endomorphic features.

Some 30 other patients of different clinical types were irregular group members. On the whole the inhibited attended less regularly than the non-inhibited, which was to be expected.

(A) *The Classical Style.*

This includes such composers as J. S. Bach, Handel, Haydn, Mozart and Beethoven. We deliberately refrained from giving our group much classical music at first. As the sessions proceeded, education resulted in increased enjoyment of the classics, whereas other types of music were more immediately appreciated. It was perhaps significant that classical music very rarely gave rise to personal associations, and these were of a very stereotyped character. This is not surprising, in view of the more impersonal, formal nature of the classics. There were certainly different types of group emotional responses. Handel's Messiah produced exhilaration, Mozart's Clarinet Quintet and Haydn's Emperor Quartet a feeling of mild serenity, Bach's Air on the G string a mood of solemnity as with normal people. Classical music shows very contrasting influences ; it tends to bore or leave the listener indifferent through being impersonal and lacking in sensual stimulation. On the other hand, it can be uplifting in a cosmic sense, and then appears to give more security through its inherent firm formal structure. This was very evident in the

group responses. There were no marked differences in the reactions to classical music displayed by the different clinical types.

(B) *The Romantic Style.*

This includes composers from Schubert to Brahms and Wagner together with nationalists (e.g. Grieg, Dvorak, Mussorgsky). Most of these compositions were effective in arousing *personal* emotional reactions and in releasing sensual inhibitions. The group as a whole liked romantic music, but a few of the more inhibited were detached or disliked the more stirring sensual music, e.g. Rimsky-Korsakov's *Scheherazade*, Berlioz's *Roman Carnival* Overture, Wagner's *Ride of the Valkyries* and *Magic Fire Music*. The following are examples of associations to various romantic compositions :

(1) *Scheherazade* (last section). This work was not known to anyone, and was deliberately played without any preliminary information being given. A middle-aged extraverted paraphrenic revived memories of sexual adventures in her youth ; she had similar reactions to Borodin's *Polovtsian Dances*, which had also been played without any remarks. These dances, too, are particularly stimulating to the senses.

An inhibited neurotic produced a piece of sexual symbolism when thinking of an African snake charmer with his snake.

A catatonic schizophrenic with extraverted features and pyknic build thought of " the ground covered with blood in a bull fight." This was followed by other aggressive phantasies (e.g. a sandstorm in a hot desert). He had personally experienced both of these events, and found the emotions aroused very unpleasant. He suggested that such music should be used " to incite a fighting spirit if necessary."

(2) Schubert's *Ave Maria :* The group as a whole was emotionally stirred, and one, an extraverted paraphrenic, a Roman Catholic, was in tears.

(3) A Chopin Mazurka : A schizophrenic said it made him melancholy, without releasing his sorrow.

(4) Tchaikowsky's 5th Symphony (slow movement) : In contrast to the slow movement of Mozart's Symphony No. 40 in G Minor, which had been played immediately before and to which the group generally had reacted by lack of interest or boredom, this work stirred up lively emotions, personal associations and active discussion. One inhibited schizophrenic said, " Most people like to be stirred up and escape from themselves." Another schizophrenic with marked affective features and pyknic build said the work stirred her feelings unpleasantly. Two other very inhibited schizophrenics would not admit that they were affected, but appeared to rationalize as a form of resistance. One of these was later noticed listening intently to a wireless performance of this work. An anxiety neurotic (morphine addict) drew a picture showing the rise and fall of emotion in the music and felt no solution had been reached. An extraverted paraphrenic felt the composer was grappling with a personal problem. A few days later she wrote a letter, saying " the music has made me think of governments struggling with big problems and farmers with the soil." She also felt that the importance of love in life was depicted in the music.

(5) Wagner's *Ride of the Valkyries*: Here a short preliminary explanation was given. A grossly inhibited schizophrenic said he was not interested "because gods and goddesses are not real." Another inhibited schizophrenic with affective features and pyknic build strongly disagreed. She said she had had personal religious experiences, which had been very definite. When asked about these, she said, "I felt God inside myself."

The anxiety neurotic mentioned above said Wagner was her favourite composer "because he causes stormy feelings inside me which I like to experience." Then she added in a querulous tone of voice, "otherwise they are asleep."

A general discussion followed on the power of music to affect one's emotions, and members gave examples of how they had been annoyed or depressed as a result of listening to different works.

In general it was very clear that romantic music produced much more direct emotional release than the classics without necessarily providing any sublimation. Such release as in individual psychotherapy was accompanied not only by feelings of pleasure, but also at times by marked discomfort.

The positive group atmosphere was more noticeable than with classical music, but interpersonal relationships were rather spasmodic.

(c) *Modern Impressionistic Style.*

The group readily accepted this style, especially where it was of mood descriptive type, e.g. Debussy, Saint-Saens, Butterworth. This was probably because withdrawn, detached psychotics were further tempted by this music to escape into phantasies, while the non-inhibited (affective) patients seemed to be attracted by the sensuous background. The following are examples of reactions:

(1) Debussy's "*L'Après-midi d'un Faune*": No preliminary information was given. Everybody liked it, including one very inhibited schizophrenic, who was rarely interested in anything. Another schizophrenic who, like the rest, did not know it, described it as "like going into a wood with sunbeams and shadows, birds singing and whispering leaves. It is on a hot day in the morning at first and the day progresses and the music ends with evening sunset." It was interesting that this young man, normally very restricted in his interests, was capable of responding in this manner, and later in the same day he came to one of us saying, "A new field of interest has been opened to me by attending these group sessions; I was not aware of understanding music before."

(2) Saint-Saens "*Danse Macabre*": An extraverted paraphrenic, who normally is very dignified, became extremely excited, spitting, swearing and gesticulating. One schizophrenic said it "calmed" her—the last reaction to be expected from a normal person to such a piece.

(3) Butterworth's "*Shropshire Lad*" Rhapsody: This was also unknown and unannounced. All the inhibited patients liked it, some very much, but there was an exception to the general rule with the non-inhibited types, two of them very definitely disliking it. One of them was able to give as a reason

that "it was too broken up in style." This perhaps suggests that the more affective types feel the need for emotional control.

In general it was felt that group atmosphere was slightly improved by comparison with the effects of classical and romantic music.

(D) *Contemporary Music.*

We divide this into four styles which tend to overlap: (1) neo-romantic, (2) expressionistic, (3) pseudo-primitive, and (4) atonal.

With regard to the more serious forms of contemporary music, we observed that younger members of the group reacted with tolerance, and wished to understand them better by repeated performances. The older members, who grew up in the late Victorian and Edwardian eras, were as a whole indifferent or averse to hearing them again. Apart from the obvious factor of increasing conservatism with age, one must remember that these older patients had grown up in more secure times and were used to more conventional musical forms.

It was interesting to observe how far the regressive features of some of the modern compositions corresponded with the regressive nature of the clinical disorders. It can be assumed that there are positive as well as negative sides of this regression, in leading away from rigid over-civilization and helping archaic and personal unconscious forces to come into consciousness.

How far can this music, which is disliked by most so-called rational people without special education, appeal to the more irrational and emotionally disturbed, because it helps them to experience and integrate their unconscious? How much value is there in a common experience of this Unconscious in a group, in contrast to an individual's experience on his own with or without analysis?

We also dealt with modern dance music. A number of different examples of this were given and found very little favour. One or two only of the younger members said "This music would be all right for dancing," but they did not want to listen to it, which is undoubtedly a partial explanation of their response. Other probable factors were that only a few patients under 21 attended the group; also a fear of the crude sensual stimulation may have resulted in rejection of this type of music as a defence-mechanism. Finally, although the group had very little education and training in music, they appeared to have acquired some sense for quality, which partly tended to prevent their accepting the cheaper forms. All the reactions to dance music appeared to be independent of the clinical type of disorder.

As a first illustration of the response to serious modern music, we may quote Sibelius' 5th Symphony. This was felt by some patients to be "like a cold wind," especially in the last movement. Some disliked it, but others obviously felt it bracing, especially the more inhibited, more introspective. One of the latter, who showed a well-marked affective component as well, said it aroused certain feelings about which she could not speak publicly. In a private interview, she revealed that it had recalled memories of two passionate love affairs with men while her husband had been away in the Army. She thought of these adventures with great pleasure and without a sense of guilt.

Examples of strongly rhythmical and rather cynically impudent music

by Shostakovitch and Prokofiev found little favour, only one or two patients finding it mildly stimulating.

On the other hand, Stravinsky's "*Rite of Spring*" provoked lively interest. A paranoid professional musician thoroughly disliked it, said "the composer should be shot," and walked out before the end. The anxiety neurotic who was a morphia addict said that if she had been present during the dance she would not have been responsible for what she did. She went on: "I think it is good for people to let themselves go from time to time, for example, by drinking too much as well."

Several others liked the exciting feelings aroused very much, and two, who were very inhibited schizophrenics, were obviously surprised at the effects produced on them. One of these said it "made her think of lunatics and children getting out of hand," and "of savages pretending to be religious, but really enjoying wicked cruelties," and "These thoughts were unpleasant: they made her go on to think about her parents, whom she had always regarded as humbugs about religion."

One schizophrenic, a West African native, said the music was genuinely primitive, and it made him think of the religious sacrifices of children he had seen in his youth.

A lively discussion followed about social tolerance towards free display of the emotions, and several of the patients of inhibited and non-inhibited type were drawn together and established better interpersonal relationships.

In contrast to these musical examples, which still employ fairly conventional forms, we also played works by the atonalists.

A duet for two violins in the sixth-tone-system by Haba was likened by a psychopath to modern painting. He said it reflected our own discordant restless times and his own continual change of jobs. An inhibited schizophrenic liked it and wanted to hear it again. He felt it meant something to him, but could not say what it was. The remainder appeared to find it meaningless or funny, two of them exclaiming in the middle, "Is that music?" (an attitude which was never observed on any other occasion).

The slow movement of Bartok's 2nd string quartet was found to have more melancholy power. Alban Berg's *Allegro Misterioso* from his "*Lyric Suite*" for string quartet was found unpleasantly puzzling by all except the one inhibited schizophrenic who had been particularly interested in the Haba duet. Hindemith's *Scherzo for Viola and Cello* was more generally accepted "because it has more shape and melody."

Finally an Octandre for wind instruments by Varese produced the strongest effect upon both types, e.g., the inhibited schizophrenic who had liked the Berg and Haba, but otherwise rarely expressed any strong feelings about music or anything else, very definitely disliked it. On the other hand, another patient of similar clinical type felt the "mechanistic force in this piece might be good to sweep one's cobwebs away."

(E) *Traditional and Folk Songs.*

Examples were taken from various nations, so that only certain pieces were already familiar. The results were quite dramatic. There was a marked

increase of group cohesion, without exception. The patients began chatting in a friendly fashion among themselves, being obviously deeply and pleasantly stirred. It reminded one of a continental café or English public house. Therefore we followed passive listening to this type of music by getting the patients to sing such songs themselves. The group atmosphere was enhanced by the pianist being a member. This was the paranoid professional musician mentioned earlier, who had been extremely suspicious, hostile and withdrawn for years and within the group became much more friendly, especially in relationship to the doctors.

After these experiences in the small group it was decided to ask the Arts Council to arrange for a well-known professional folk-song singer to give one of the monthly concerts to a big audience. Although most other concerts had been well appreciated the reception in this case was outstandingly enthusiastic, thus confirming our experiences in the small groups. This music, based on eternal human and cosmic relationships, strikes a universal chord, which binds people together, whether they are normal or emotionally disturbed.

(F) *Miscellaneous.*

For the sake of completeness, we comment on examples of comic and simple entertainment music.

To the former, the group was extremely indifferent. This was presumably because of their egocentricity and corresponding lack of sense of humour. The entertainment music included examples of marches, musical comedies, sentimental film songs, and different types of waltzes and other old-fashioned dances.

In general the group was exhilarated, as with normal people. With the exception of Strauss's waltzes, they did not express any marked wish to have any piece repeated. A discussion about Strauss's waltzes revealed the tendency to escape in phantasy into a glittering, easy-going Viennese world.

Discussion.

As a result of our observations it has become clear to us that increased group cohesion and increased interpersonal, including doctor-patient relationships, within the group, follow the use of certain types of music. Emotional release and control resulting in better integration of personality can be facilitated by music in a group. These effects represent a therapeutic gain, as a substitute for, and addition to individual psychotherapy. As emphasized before, there is evidence of specific responses to different musical styles. The *classical* style tends to provide security through its formal structure to all patients, irrespective of clinical type. There was often a marked increase in group cohesion while listening to this style, probable due to the cosmic character of some of these great compositions. But this response was only noticeable in the later stages with increasing education. The *romantic* style produced emotional release, especially of sensual inhibitions. The non-inhibited found possibilities of displacement of instinctive impulses, while the inhibited types were enabled to experience their feelings more fully. The drawback with a

number of patients, especially of the inhibited types, was that they felt unable to integrate the thoughts and feelings aroused. This makes it obvious that more research is needed to differentiate the types of romantic music which are suitable for therapeutic purposes. The *impressionistic* school of music appears at this preliminary stage to have no marked therapeutic value, except by stimulating interest in the withdrawn inhibited types and slightly improving group solidarity in all types. More beneficial effects were evident from the use of serious *contemporary* music. It had sufficient power in certain compositions (i.e. Stravinsky, Bartok, Varese) to bring repressed unconscious forces into consciousness in inhibited schizophrenics where romantic music had failed to operate. Nevertheless, we must admit that the reaction in these schizophrenics, as a whole, was not as marked as with surrealist paintings in other therapeutic groups. This may be due to the lack of obvious symbols, and even greater lack of form in certain modern compositions. However, we observed that this strongly rhythmical and dissonant style with marked primitive features awakens in psychotics a note of recognition in accordance with their own disintegrating, regressive tendencies. As with romantic music, careful selection is required, because integration is not necessarily fostered and, in fact, the patient may be made worse by being unable to come to terms with the forces aroused. *Modern dance music*, although characterized by prevailing barbaric rhythms, only appeared to act on a mildly sensuous level, and produced no noticeable favourable effect on individuals or the group. There was no doubt in our experience that improvement of group cohesion and interpersonal relationship was more evident in the response to *traditional and folk song* than to any other types of music. Although these stir up archaic unconscious forces, they clearly act as integrating factors.

Our earlier assumptions that the subverbal response to music possesses advantages in all patients (but especially the most inhibited) over more direct forms of self-expression through art appear to be justified. This suggests that for some patients a preliminary approach through music might facilitate other therapeutic methods of reaching the Unconscious.

In every Mental Hospital there must be a by no means negligible number of fairly well preserved patients who should be suitable for this type of group treatment.

In conclusion we would emphasize the particular therapeutic importance of *form* in music as in the other arts. A content with strong emotional power but no apparent form appears to be more disturbing than a content without marked emotional power, but with a firm structure. Uncontrolled emotion is rightly felt to be dangerous, and this was verbally expressed by a patient. He said he felt that music by Bach which was solemn and sad " was so helpful because it was so balanced." It therefore appears necessary, as with normal people, to give some elementary technical instruction about musical styles. This particularly applies to contemporary music, which might be made more intelligible to the younger generation, which has grown up in the unsettled period which it reflects.

We are inclined to think that in most psychotic patients the aesthetic sense, especially the response to rhythm and melody, is comparatively better

preserved than other intellectual and emotional qualities. Attempts at personality reconstruction may therefore be made by appealing to the fundamental human need for shape. This universal need was mirrored in our small group, for whom the experience of eternal forms of beauty induced security through inner integration.

Summary.

(1) Music was used in a small group of psychiatric patients with various clinical disorders. They were mostly psychotic, and were fairly equally divided into inhibited and non-inhibited types.

(2) The response to different musical styles was investigated, particularly with regard to interpersonal relationships in the group.

(3) Different therapeutic effects are enumerated, and advantages and disadvantages of the respective styles are discussed. Also certain differences in reaction become evident according to clinical types.

(4) Romantic music, although often producing emotional release, did not tend to facilitate group cohesion.

(5) Contemporary serious music had a slightly more integrative effect than the previous style.

(6) Classical music occasionally provided a greater degree of group cohesion, but mainly in the later sessions, as a result of progressive musical education.

(7) Traditional and Folk songs were quite the most effective in increasing the harmony of the group as a whole, and in fostering integration of the individual personalities.

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References.

(1) Hall, M. P. (1936), "The Pythagorean Theory of Music and Colour," from an *Encyclopaedic Outline of Masonic, Hermetic, Kabbalistic and Rosicrucian Symbolical Philosophy.*

(2) Pargeter, Wm. (1792), *Music as a Form of Treatment in Mental Disorders: Observations on Maniacal Disorders.*

(3) Ruegnitz, Marj. (1946), "Applied Music on Disturbed Wards," *J. Occup. Therapy and Rehab.*, October.

(4) Van de Wall, Will. (1923), "Music's Mission in Correctional Personality Reconstruction," reprint from *Annual Report of Prison Association of New York.*

(5) *Idem* (1923), "Music Therapeutics in a Mental Hospital," *Long Island Med. J.*, **17**, 221.

(6) Simon, W. (1945), "The Value of Music in the Resocialization and Rehabilitation of the Mentally Ill," *Mil. Surg.*, **97**, December.

(7) Dunton, W. R. (1946), "Recreation and Music Therapy," *J. Occup. Therapy*, **25**.

(8) Blackwell, E., and Neal, G. A. (1946), "Music in Mental Hospitals," *ibid.*, **25**.

(9) Licht, S. (1947), *Music in Medicine.*

(10) Tilly, M. (1947), "The Psychoanalytical Approach to the Masculine and Feminine Principles in Music," *Amer. J. Psychiat.*, **103**, January.

(11) Moreno, J. L. (1938), "Creativity and Culture Conserves, with Special Reference to Musical Expression," *Sociometry: A Journal of Inter-Personal Relationships*, **11**, 2 May.

(12) Ward, Milton H. (1945), "Note on Psychomusic and Musical Group Psychotherapy in Group Therapy," *Group Therapy—a Symposium.*

(13) McKay, Leila A. (1945), "Music as a Group Therapeutic Agent in the Treatment of Convalescents," *ibid.*

(14) Altschuler, T. M. (1945), "The Organism as a Whole and Music Therapy," *ibid.*

(15) Hanson, D. (1942), " A Musician's Point of View Towards Emotional Expression," *Amer. J. Psychiat.*, **99**, 317.
(16) Howes, F. (1926), *The Borderland of Music and Psychology.*
(17) Moreno, J. L. (1945), " Group Psychotherapy," *Group Therapy—a Symposium.*
(18) Slavson, S. R. (1943), *An Introduction to Group Therapy.*
(19) Bion, W. R. (1946), *Bull. Menninger Clin.*, **10**, 77.
(20) Kräupl, F. (1947), " Emotional Interplay and Dominant Personalities in Therapeutic Groups," *J. Ment. Sci.*, **93**, 613.
(21) Jones, Maxwell (1948), " Emotional Catharsis and Re-education in the Neuroses with the Help of Group Methods," *Brit. J. Med. Psychol.*, **21**, part 2.

THE MEASUREMENT OF THE STRUCTURE AND BEHAVIOUR OF THERAPEUTIC GROUPS.

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Introduction.

Ever since Group Therapy became established as a scientific method for the furtherance of mental health, therapists have looked for ways of measuring the behaviour of the Group. It is clear, for example, that there are important differences in structure between a group of people newly assembled in a railway carriage and those who share the same dining table at the end of a long sea voyage. Interpersonal relations have been established in the latter company, and each member has himself achieved some kind of relationship to the group as a whole. It cannot be conceded that any purpose would be served in quantitatively measuring these relationships in the two kinds of groups which have been mentioned. This is because they are accidentally formed groups, lacking a basic purpose and without a pre-appointed leader. Membership of such a group may be interesting, boring or entertaining, but it cannot be said to play any great part in the life-plan of the individual.

A Youth Club aims at being one of the many means by which the individual adolescent boy or girl may form better social adjustments, and become a more complete person. Each member moulds his personality to the structure of such a club in proportion to the character and intensity of its underlying principles and the opportunity offered by activities outside the club. Hence, in such a group as a Youth Club, there is undoubted scope for quantitative tests to be used for research into the ways in which adolescents and adults adjust themselves to adult social relationships. Further reference will be made to this subject in this paper.

When groups of psychotic, latent psychotic and neurotic patients are formed for therapeutic purposes, the therapist must at once notice that his group differs in important ways from the Youth Club just mentioned. Each member of the group has been compelled to withdraw from the social groups of his daily life and from his own consciousness by the severity of his mental conflict. Therefore, the members are much less likely than the average person to be members of any social or recreational group when they first join the therapeutic group. Disorders of personality, failure of emotional adjustment, and a childish state of the social intelligence are additional reasons why the individual may have failed to find a place in any organized group. The therapist may take heart from this, for the very retreat from consciousness

which has led the patient to the therapist gives to the group, as to the silent monks of the middle ages, a dynamic factor not possessed by, or appreciated by, the so-called normal group.

When we first entered the field of group therapy, three things seemed to us to be of the first importance. They were, (*a*) the criteria of selection for group therapy, (*b*) the technique of group therapy, and (*c*) the assessment of what is happening in the group. These things are still of first importance to us to-day. The type of patient most suitable for group therapy is still under consideration, not only in our own groups, but by all workers in this field. With this, and with the technique of group therapy, we are not here concerned. The assessment of what is happening in the group appeared to us to be essential to any long-term programme of group therapy. No group can remain healthy unless its members are given opportunities to express themselves in action. Since, in therapeutic groups, the leader does not share in the common problems of the group, any valid assessment of the interpersonal relations in the group must be made by members of the group themselves.

Assessments made by the therapist yield valuable information provided the therapist is prepared to accept the disadvantage of making notes whilst the group is meeting. We have been more interested in the assessments made by the members themselves, and have sought a method by which the group could itself record in a simple manner its own structure and internal relationships. Further, we desired to study the changes which took place in group structure over a lapse of time. Finally, we sought to compare the structure of different kinds of psychiatric groups, and to compare these with a non-psychiatric group, i.e. a Youth Club. These terms of reference form the basis of the present study.

J. L. Moreno, who defined the process of acceptance by the individual of his fellow members in a group, may be said to be the father of scientific group therapy. We decided that the individual's choice of other members of the group to share his common practical and emotional activities could be regarded as his acceptance of that individual for the constellations which the chosen activities represented. If the activities covered a reasonably wide range of human activity, we should have a measure of the degree to which a person accepted the whole personality of his choice. If he chooses only certain individuals for certain activities, we can form an opinion about the more outstanding qualities of the person chosen. It may be unnecessary to mention that such a method does not discover the "popular figures" in the group. A popular person may make little contribution to the life of the group. Furthermore, the individual's personal heroes of leadership and culture are not necessarily those with whom he would care to share his problems, for the very reason that he would dislike such a person to know of his own imperfections.

In constructing a practical test of acceptance, we used the tests of Northway and Potashin as a foundation. This test was designed for use by children in the class-room, and the four questions asked each child represented essentially practical situations, in each of which he was asked to state which three children he would best like to share this activity with. By redesigning the test questions to include two practical and two emotional situations, the test has been made

applicable to the adult situation. The details of the test are described in a later section. The method of assembling the results is that used by Northway. In comparing the results obtained in different groups, we have made use of the statistical work of Bronfenbrenner.

Whereas the careful work of Bronfenbrenner has been strictly adhered to, the conclusions to be drawn from the test present certain differences from those of other workers. We believe that this paper represents the first published work on the systematic study of the structure of adult therapeutic groups.

The Field.

The material for this study has been obtained from three groups: (1) a Social Therapy Club for out-patients, (2) an in-patients' group at a Mental Hospital, and (3) a Youth Club. These groups have certain features in common. All are designed to help their members to a better social adjustment by means of establishing specific relationships between the individual and the group leaders, the individual and the group, and between individuals in the group.

The guidance of the individual towards mental health in its broadest sense is the common aim of all three groups.

Each of the groups studied is part of a larger organization, i.e. the Croydon Mental Health Service, the Mental Hospital associated with that Service, and a Church. The organizations sponsoring the groups by their nature determine two aspects concerning the place of each group in the community. These are, first the relationships between the various groups; and second, the attitude of individuals in the community towards the prospect of joining one of these groups.

As examples of inter-group relationships, we may mention that some groups in the community will actively assist a mental treatment group on the grounds of furthering positive health, whilst others will be prejudiced on the grounds of a traditional attitude towards mental illness. Individual attitudes towards the respective organizations predetermine a person's decision to join the group, and later, whether he shall continue membership. While the sponsors of each group provide a degree of material security, they do not directly intervene in the conduct of its affairs. (In no group was identification with the aims of the larger institution a pre-requisite of membership.)

A more detailed description of these groups will show certain important differences.

Group I: The Out-Patients' Club.

This Club was opened in January, 1947, under the leadership of the writers. Meetings are held once a week, and a Committee of members decides questions of programme and club management.

The programme includes discussions on questions of general interest as well as on psychiatric problems, dramatic and musical evenings, dancing, games, etc. A canteen is staffed by members.

Recruitment tends to be selective. Patients attending for out-patient treatment and some of those discharged from hospital are invited to join by the leaders.

Information about each member prior to enrolment is obtained from a psychiatric interview and a social and psychiatric history. In the course of his attendance the patient's social problems are noted. Intelligence is tested by Raven's matrices.

Membership and attendance.—The number of active members has remained at about 30 throughout the period covered by this study, and the bulk of the membership has remained constant. The average attendance is 19.

The treatment aim of club membership is openly accepted by each patient in relation to the staff, but despite the club's friendly atmosphere, there is little spontaneous discussion of personal problems among members.

Group II: The In-Patients' Group.

This group has met once a week since November, 1946, for an hour's discussion of psychiatric problems: The writers have used a wide variety of discussion techniques, ranging from free discussion of problems raised by the patients, to discussion illustrated by dramatic acting out of situations, and to the didactic lecture-discussion method. Paintings and drawings have also been used to help towards self-expression. Recruitment for this group tends to be less selective than for Group I. Most patients attend on the invitation of their doctor, but some are brought by friends.

The membership of this group is subject to constant change, as patients attending the group are mostly on the road to recovery. There have therefore been large variations in attendance, ranging from 7 to 16. Male patients tend to be in the majority.

The place of this group is ancillary to the general treatment plan. Patients attending are also, as a rule, under insulin, E.C.T. or analytical treatment.

This group has failed to develop any social structure, although there are a number of practical tasks for which members could usefully take responsibility, such as preparation of the meeting room, acting as secretary, etc. It differs in this respect strikingly from Groups I and III. It is the only one of the groups studied in which movement is almost entirely absent, and in which certain stereotyped features have developed. Men and women tend to sit at opposite sides of the room, and irrespective of the technique used, the members' contributions are nearly always directed to the leaders. Attendance is entirely voluntary, and by the very nature of the group patients come to it largely because they hope to derive from their attendance some information which will enable them to leave the group permanently.

Group III: A Youth Club.

A Church Club consisting of 40 young people aged 14 to 21 was selected as the third group in this study, largely because its programme and method of leadership were similar to that of the O.P. Club described above. Here, too, the man and woman leader leave as much responsibility as possible to

its members. Recruitment is non-selective apart from the age limits, and the selection which automatically follows from the Club's attachment to a Church.

Membership of this group has remained fairly constant, except for an influx of new members from the lower age groups and the formation of a separate unit for those over 20. The average attendance is 30. Boys and girls attend in approximately equal numbers.

The leaders have little information about the background history or special problems of the members on enrolment. This was the group in which the greatest amount of spontaneous movement coincided with a good deal of self-imposed group discipline. The purpose of the club as a place in which new relationships could be established and old ones enjoyed was consciously acknowledged by members.

The Test.

In the conduct of therapeutic groups systematic observation of interpersonal relationships, and of the individual's relation to the group as a whole, has long been a problem. These two factors which distinguish group treatment from individual psychotherapy have been difficult to assess without disturbing their very operation.

The writers, therefore, felt the need to learn more about the patient's progress in the group derived from observations on social behaviour and participation.

For this purpose we developed a modified form of the Sociometric Test as used by Moreno. The test, as defined by Moreno, consists in the choosing of associates from among group members for one specific activity or situation. As criteria of choice, social roles which were considered basic to life in a group were used.

The following criteria were selected as the four most representative of social roles :

A.—Who would you choose as a companion for your daily routine occupation?

B.—If you had £100 to spend, with whom would you share it?

C.—If you had great joy ahead of you, with whom would you share it?

D.—With whom would you share a loss, i.e. a human sort of loss?

Criteria *A* and *B* were selected as representing work and pleasure aspects of life on a material level in which emotional relationships may or may not be involved. Criteria *C* and *D* aimed directly at revealing potential or actual emotional dependence.

Faced with a wide range of intelligence quotients and great differences in the social background of group members, it seemed desirable to obtain some evidence that these criteria were indeed meaningful to group members in the sense intended.

Members of each group were therefore asked to define the situation they had in mind while making their choices at the end of the series of tests. It was stressed that this was entirely voluntary, and definitions were not obtained from all participants.

A total of 23 members from all three groups gave definitions :

Criterion A.—Routine work was defined by eight members as taking place in the immediate group setting. Fifteen members defined it as a work situation outside the group.

Criterion B.—Spending £100 was defined by all in terms of a holiday, entertainment or social gaiety.

Criterion C.—A great joy was defined in personal terms by 10 participants, in terms of more material situations such as "social gaiety, money, a holiday or games," by 8. This section included some surprising definitions of joy, such as: "help in health received from the Club"; "the sharing of a secret," etc.

Criterion D.—All participants defined the sorrow situation in personal terms, e.g. illness or death of a close friend or relative.

Even this small number of definitions shows that the criteria selected are sufficiently flexible to have meaning to the wide range of participants along the lines indicated. Thus abstract concepts such as "great joy" may to some participants be inseparable from concrete pleasure situations such as a

Summary of Scores : *In-Patient Group.*

Date of 1st test, 2 April, 1947.
„ 2nd „ 5 November, 1947.

	1st Test.	*2nd Test.*
Number of men	5	7
„ women	5	2
	(2 walked out before test began)	
Total choices made	28	59
Number of in-group choices	5	37
„ staff choices	10	2
„ choices to patients' families	5	10
„ choices to patients outside the group	8	10
Total out-group choices	13	20
Men-men choices in group	2	34
Women-women choices in group	1	—
Men-women choices in group	—	2
Women-men choices in group	2	1
Number failing to do test	5	1
	(including 2 who left room)	
Average score	0·5	4·6
Highest score	2	12 (male).
Number of isolates	3	1 (lowest score, *nil*).
Total possible number of choices	120	108

Note.—No statistically accurate estimates of acceptance or group structure can be obtained from the first test because of the small number of in-group choices.

holiday. Equally some individuals choose associates for the work situation only in terms of work in the group, while for others the choice has validity for situations outside group life. It is probable that definitions of choice situations would change in relation to the individual's adjustment to the group, and to his personal development. There is much scope here for further research in this field.

Test technique.—The test was preceded on each occasion by an explanatory talk. Each subject was given a card (as illustrated) and asked to make 3 choices for each situation. Subjects were asked to choose in-group members where possible. If they felt compelled to choose out-group members or staff, they were told that they could do so.

Conclusions Reached by Study of In-Patient Group.

The first test showed that group cohesion and group structure were absent. The emotional tension roused in the group was such that one patient, a schizophrenic girl, left while the test was being explained. She said afterwards that she did not leave because of any feeling of anger, but because of the unpleasant associations aroused when the third situation was mentioned. Her friend, a tense psychoneurotic girl, left also in sympathy with her. Immediately after this a male schizophrenic patient said that he regarded the test as a gross infringement on his personal life, but he did not leave the room although he would not participate in the test. The therapist felt at this point as if he had entered a crowded railway compartment, and attempted to carry out a similar test. The situation looked like ending in the complete break-up of the group. The day was saved by an epileptic who said that it was obviously up to members of the group to support the therapist and to assist in treatment. After this the test proceeded smoothly, although the results clearly revealed the causes of such an unpromising reaction to the test. The conclusions drawn from this test may be summarized as follows:

(*a*) This was a young group, unaccustomed to the tradition of group therapy.

(*b*) The members had not had much opportunity for intimate social contact.

(*c*) Individual members were not accustomed to describing personal feelings in the presence of others. At that stage, group behaviour was not being analysed by the therapist.

(*d*) The relatively high percentage of staff choices was divided among three doctors, one social worker and the chaplain. Hence it could not be said that the members of the group felt any special dependence towards the therapist.

The second test revealed a greater degree of group cohesion, although the almost complete absence of inter-sex choices was not a good sign. Only one member of the group failed to participate. One third of the choices went outside the group. Although this second test was carried out in what was traditionally the same group, none of the members present at the first test was present at the second. This was because all the members present on the first occasion had left hospital except the two who had walked out of the room during the first test.

The second test revealed the necessity for members to know each other socially. The common basis of neurosis or psychosis does not breed acceptance, and as a result of this test it was decided that the group should meet together for an additional hour a week on a purely social basis. One feels that the

Out-Patient Group.

Date of 1st test, 25 February, 1947.
,, 2nd ,, 17 June, 1947.
,, 3rd ,, 4 November, 1947.

	1st Test.	*2nd Test.*	*3rd Test.*
Number of men	5	7	9
,, women	9	11	10
Total choices made	132	185	177
Number of in-group choices	84	119	121
,, staff choices	36	48	41
,, choices to patient's family	2	6	1
,, choices to patients outside group	10	9	11
,, choices to friends outside group	*Nil*	3	3
Total out-group choices	14	18	15
Men-men choices in group	20	16	23
Women-women choices in group	44	66	43
Men-women choices in group	10	27	21
Women-men choices in group	10	10	34
Number failing to do test	*Nil*	1 (male)	2 (men)
Average score	6·0	6·7	6·3
Highest score	11	16	15
Number of isolates (no score)	*Nil*	3	*Nil*
Total possible score	168	216	228

Notes on table (*O.P. Group*).

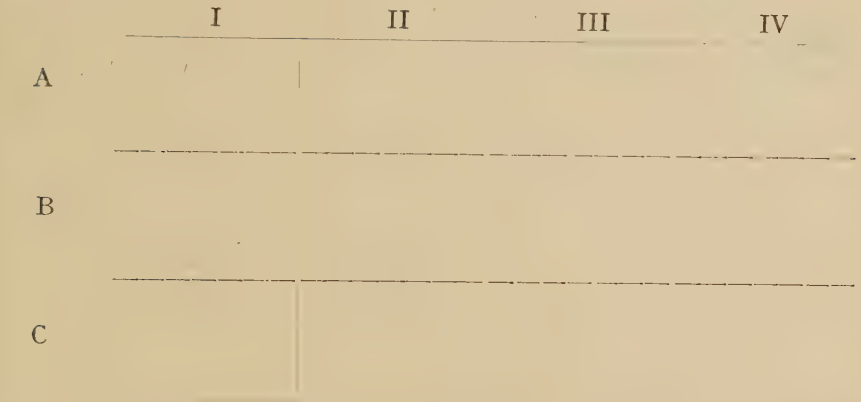
(*a*) The discrepancy between "Total choices made" and "Total possible score" occurs because members did not all complete the cards.

(*b*) Two out-group choices in the 1st test were made to another psychiatrist and P.S.W. respectively and are not included in the analysis of the out-group choices.

(*c*) In the 2nd and 3rd tests one of the patients failing to perform the test was an intelligent man aged 24 years (Matrices test Grade II). He suffered from an inability to visualize proper names into their written equivalents. It was thought better not to embarrass him by helping him to write down his choices in front of the other patients. The other patient failing to write anything in the 3rd test was a schizophrenic who was not well at the time, his condition having recently deteriorated. He was becoming more isolated and less contributory to Club affairs. It is noteworthy that the test revealed an impending breakdown of all social contacts of a more severe nature than might have been apparent by ordinary observation, and it is probable that this patient will have to return to hospital again fairly soon.

Specimen of Scoring Card.

Name :
Age :



A = 1st choice.
B = 2nd choice.
C = 3rd choice.

I = 1st situation.
II = 2nd situation.
III = 3rd situation.
IV = 4th situation.

FIG. 1.

isolation and preoccupation of the psychotic at the hospital stage of treatment is such that group therapy must depend for group cohesion on the common factor of mental illness rather than on any well-marked interpersonal relationship. The first test showed that each member lacked any real relationship either to his fellow members, the group as a whole or the staff. In the second test relationships to the group as a whole were considerably strengthened, but interpersonal relationships and dependence on the therapist were still weak. Whilst in hospital the patient identifies the therapist with the whole hospital, whilst as an out-patient he shows his dependence on the therapist alone very strongly, as will be seen later.

CONCLUSIONS REACHED BY STUDY OF OUT-PATIENT GROUP.

Three tests were carried out with the out-patient club. The first of these was done when the club had been established about two months. The 2nd test was done four months after the first, and the 3rd test five months after the second. Between the 2nd and 3rd tests the club had been closed for a month during August.

All these tests proceeded smoothly and without any personal disturbance. By the time the 3rd test was carried out, it had been welcomed by most members as part of the treatment plan. Study of the table reveals a fair degree of constancy in all three tests. Making a basic assumption that individuals should be expected to make progress through the medium of a social club, this result may seem at first to be disappointing. An analysis of this kind, however, reveals only information about the structure of the

group in which the individual is placed. A study of the sociograms shows that individuals do in fact progress during their stay in the club, and many achieve increasing acceptance by their fellows, and take on positions of responsibility. The membership changes considerably, and it is of great importance to note that, with many new members participating for the first time in the 2nd and 3rd tests, the sociometric structure of the group remains almost unaltered.

The following specific conclusions about group structure can be drawn from the sociograms.

1. The ratio of in to out group choices is higher than for the in-patient group, but not so high as for the Youth Club.

2 Dependence on the staff is high and remains consistently so. Most of the staff choices were made on the emotional situations. As previously noted, staff dependence is not marked for the in-patient group, but this seems to depend on the patient achieving his main transference to the whole hospital. In the social therapy club dependence on the therapist and social worker takes the place of this ; by the date of the 3rd test the general indications were that the club members were becoming more self dependent, and looking more to the committee members for support and encouragement. The test reveals, however, an almost constant dependence on staff, and it appears that this state of affairs is related to unconscious mechanisms. It teaches us also that it will probably not be possible for members to transfer to another club unless they can either lose this dependence or else be fortunate enough to select a lay social club where such dependence is possible.

3. A small number of " mother figures ": older women of the maternal temperament attracted a significant number of choices, but it cannot be said that this was a striking feature of the test results.

4. Intersex choices were the most " normal " feature of the scores. They corresponded closely in distribution to those found in the Youth Club.

5. Study of the sociograms will readily reveal the existence of " cliques," should these be present. Such a type of grouping was only apparent in the 3rd test, and was related to a hysterical self-centred woman who depended for her mental support on collecting around her and caring for a number of psychotics, mostly of low intelligence. She would bring these to the club from time to time, but they usually proved failures in the club setting and left. On this occasion her " group " consisted of (*a*) a dependent inadequate hysterical man of 26 with a bad home background, who had never earned his own living, (*b*) a mentally defective girl with an I.Q. of 52 who had only recently left hospital, (*c*) a schizophrenic of high I.Q. who had left hospital against advice and who was unstable and non-contributory. Two other schizophrenic patients of lower I.Q. than the majority of the club associated themselves with this group. The separation of this group of six patients from the remainder of the club had been noticed for a few weeks and had been causing us some anxiety. The mentally defective girl only came on that occasion, and was advised not to come again. The two schizophrenics will probably have to return to hospital within the next few months.

6. *Correlation between acceptance score and social status.*—This has been worked out for the 3rd test only. The raw scores of acceptance were cor-

	Miss L—.	Miss H—.	Miss J—.	Miss C—.	Miss K—.	Miss Ly—.	Miss S—.	Mrs. T—.	Miss P—.	Miss Q—.	Mrs. G—.	C. J—.	P. E—.	R. B—.	R. Br—.	L. L—.	R. G—.	T. G—.	Psychiatric Social Worker.	Psychiatrist.	Out Group. Miss N—.	Miss M—.	Miss D—.	Others.
Miss L—	..	..	..	..	IIII	IOOO	..	OIII	..	..	..	..	..	IOII	OIOO	..	..	..	..	..	..	..	..	..
Miss H—	..	..	IIIO	IIII	..	IIOI	..	..	..	..	..	..	..	..	..	..	..	..	OOII	..	..	..	..	..
Miss J—	..	..	IIII	IIII	..	..	..	..	..	..	..	..	..	..	..	..	..	..	IIII	..	..	..	..	..
Miss C—	..	..	IIII	IIOI	..	..	..	..	..	..	..	OOIO	..	..	..	..	..	..	OIII	..	..	..	..	..
Miss K—	IIOO	..	..	..	..	..	..	OIOO	..	..	..	..	..	OIOO	..	..	..	..	..	..	..	..	..	..
Miss Ly—	IOII	..	..	..	..	..	IIOO	..	OIOO	..	..	..	..	..	..	..	..	..	IOII	OOII	OIOO	..	..	..
Miss S—	..	..	..	..	..	IOII	..	IIOO	..	..	OIIO	..	..	..	..	..	..	..	IIIO	OOOI	..	..	..	..
Mrs. T—	OIOO	..	..	..	OOIO	..	IOII	..	OIOO	IOOO	..	..	..	OIOO	..	..	..	..	IOOI	OIOI	OOIO	..	..	..
Miss P—	..	..	..	..	..	..	..	OIIO	..	OIOO	..	..	..	..	..	..	..	..	IOII	OIOI	IOOO	IOII	..	..
Miss Q—	OOIO	..	..	..	OIOO	IOOO	IOOO	OOOI	OOIO	..	..	..	..	..	..	..	OOOI	..	IIIO	..	..	..	..	..
Mrs. G—	..	..	..	..	..	..	..	IOOO	..	..	..	OIOO	..	..	IOOO	..	..	..	OOIO	OOOI	..	..	..	Seven
C. J—	OIIO	..	IOII	..	..	..	..	..	..	..	..	..	IIII	..	..	..	..	..	..	..	..	..	IOII	..
P. E—	..	..	IOOI	..	..	..	..	..	..	..	..	IIIO	..	..	..	..	..	..	OOOI	IOII	..	..	..	..
R. B—	OIOO	..	..	..	OIIO	..	..	..	..	..	..	..	..	..	..	..	..	..	IIII	IOII	..	..	..	Two
R. Br—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
L. L—	..	..	..	..	..	OIOO	..	..	..	IOII	..	OOIO	IOIO	IOOI	..	..	..	..	..	OIOI	..	..	..	..
R. G—	..	..	..	..	IOIO	..	OIOO	OOOI	OIOI	IIIO	..	IOOO	OIIO	OOOI	..	..	..	..	..	..	..	..	..	..
T. G—	..	..	..	..	..	..	..	..	..	..	IIII	..	..	..	..	..	..	..	IOOO	IOOI	..	..	..	..
A + B and C + D	6–4	0–0	8–8	6–5	5–5	6–3	5–2	6–5	3–2	5–3	3–3	4–3	4–4	4–4	2–0	0–0	0–1	0–0	13–17	6–12	Total	out-group = 18.		choices
Total choices made	10	0	16	11	10	9	7	11	5	8	6	7	8	8	2	0	1	0	30	18		18		

Example of scoring :—IIII = Choices made to a person for each of situations *A*, *B*, *C* and *D* respectively.
Out-patient Club :—Date, 17 June, 1947 (2nd Test).

FIG. 2.—*Sociogram made from the Second Sociometric Test at the Out-Patient Club.*

related with I.Q. (Raven's scale), length of membership corrected to a maximum of five units and membership on the committee, scoring 5 for re-election, 2·5 for a single term of office, and *nil* for non-election. These are arbitrary figures, and were chosen so that all the scores for social status lay between 0 and 5. For the intelligence scores, persons in group V scored 0; those in Group IV scored 1; in Group III −, 2; in Group III +, 3; in Group II, 4; and in Group I, 5. When this was worked out there was a correlation coefficient of + 0·61, which indicates a significant relationship between acceptance in the situations set and intelligence and social status in the group.

7. *Correlation between acceptance score and voting score at a committee election.* —Two weeks before the 3rd test was carried out there was an election for four vacancies on the committee. There were six candidates. Each member of the club, 18 being present, was allowed four votes and self choices were not permitted, although one member did nevertheless choose himself. The results were as follows:

Initials.	*Voting.*	*Acceptance score.*
F. P—	13	14
R. B—	11	5
Miss B—	10	5
Mrs. C—	9	4
Miss L—	8	9
Miss M—	5	0

The correlation in this case is + 0·75, which may be regarded as significant.

Youth Club.

Date of 1st test, 30 April, 1947.
„ 2nd „ 15 October, 1947.

	1st Test.	*2nd Test.*
Number of boys	14	17
„ girls	16	21
Total choices made	338	449
Number of in-group choices	244	384
„ staff choices	20	13
„ choices to family	*Nil*	*Nil*
„ choices to friends outside group	6	1
„ choices to club members outside group	68	51
Total out-group choices	74	52
Boy-boy choices in group	66	101
Girl-girl choices in group	84	148
Boy-girl choices in group	58	82
Girl-boy choices in group	36	53
Number failing to do test	*Nil*	*Nil*
Average score	8·0	10·0
Highest score	27	32
Number of isolates (no score)	2	1

Conclusions Reached by a Study of the Youth Club.

The main features of the results obtained from testing the Youth Club were lack of rigidity and self dependence. Lack of rigidity is revealed in several interesting ways. Although several of the most fully accepted members of the club remained so for both tests, the people who chose them varied from one occasion to the next. The Committee received comparatively scant acceptance. Some Committee members were not chosen at all. We did not think that this revealed an unhealthy situation in the club. On the contrary, the rigid conformity to selecting an elected Committee member for the situations by the out-patient group may be compared unfavourably to the choosing of personal friends which we found in the Youth Club. The number of staff choices was low, and those made were mostly on the emotional side. The number of in-group choices was high, and the intersex choices were distributed in a way consistent with the social behaviour of adolescent boys and girls.

Discussion with the leaders after each test revealed some information about two or three cards which showed abnormal responses. We concluded that these were cases of mild adolescent instability, and that their numbers were not excessive. Among so-called "normal" clubs and groups, one may say that the less pure and the more heretical are its aims, so do larger numbers of unstable, potentially or actually neurotic people join its ranks. Thus, the low number of abnormal responses in this club indicated a high degree of mental and spiritual health.

Summary of Results.

The tests used reveal the following essential structure in the three groups tested :

In-patient Group.

(*a*) The relationship of the individual to the group is poor.

(*b*) Inter-personal relations are almost absent.

(*c*) Dependence on staff is directed to the hospital as a whole rather than to the therapist.

Out-patient Group.

(*a*) Specific group feeling exists, and the individual shows moderate dependence on the group. This relationship is rigid, and a high positive correlation exists between acceptance and the members' specific function in the group.

(*b*) Inter-personal relations are moderately good, but are rigid in form.

(*c*) Dependence on the staff is well marked.

Youth Club.

(*a*) The group and interpersonal relations are good, flexible, and based on normal health, good feeling, and a common mental and spiritual aim.

(*b*) Dependence on the staff is not great.

(*c*) Abnormal responses were few in number.

Discussion on the Possibilities of Further Statistical Analysis of the Results of the Tests.

The work of Bronfenbrenner was directed towards the computation of what he calls "social status indices." The essential purpose of the series of calculations which he carried out is to discover which scores of acceptance are significantly high and which are significantly low. When the raw scores are plotted against their frequency of occurrence the resulting histiogram shows some skewness in every case, due to differences between the mode and the average of these occurrences within the group. Thus the probability of chance occurrence for any particular number of choices received can be calculated. Thus it is possible to compare the significance of changes in score received by an individual over two or more tests; when the number of members in the group varies from test to test in practice, it nearly always does. As this paper is limited to a discussion on group structure and the interpersonal relations in groups, such an assessment hardly comes within the terms of reference of this paper. The discussion is important, however, as therapists may consider using this test to make long-term individual studies on social therapy clubs or Youth Clubs. If this is to be done, it is essential to have a constant frame of reference when comparing groups of different sizes. Where such statistical work is required, Bronfenbrenner's arguments for the use of the Type III function for approximating the expanded binomial appear strong and well founded.

Summary and Conclusions.

1. A modification of Moreno's sociometric test has been devised for the study of adult groups.

2. Two groups of patients consisting of those suffering from latent or active mental illness and of those recently recovered from such illness were given the test. Tests were also carried out on a Youth Club, which was used as a control.

3. The test was used specifically to examine the relationship of the members to the group, and the interpersonal relations of individual members of the group.

4. The test situations were devised empirically to cover as wide a range of human activity as possible. While we do not claim to have found fully representative situations, the patients' own conception of the situation in terms of a specific activity (for example, going for a holiday) is the true measure of the broad function of the situation. Further research by this method may give us the basis for some standardization of the test situations.

5. The results of the tests show constant and rigid patterns of relationship in the therapy groups, compared with individuality and flexibility in the control group.

6. The possibilities of using the test to study the growth of interpersonal relations are discussed. We have concluded that statistical care is necessary if such a study is to have validity.

7. This test may prove of value to Youth Club leaders as well as to group therapists. It should, however, be pointed out that the difficulties of inter-

pretation are considerable. In the present state of our knowledge of sociometrics, it would appear desirable that the tests should only be carried out with the co-operation of someone experienced in this technique.

We are indebted to Dr. T. P. Rees, Medical Superintendent of Warlingham Park Hospital, for permission to publish this report. We should also like to record our thanks to Mr. Rae, secretary of the Croydon Youth Clubs, for his co-operation, advice and help in placing the records of no less than 46 Youth Clubs at our disposal. Our thanks are also due to the friendly help of the leaders of the Youth Club selected.

References.

(1) Moreno, J. L. (1934), *Who Shall Survive?* New York: Beacon House.
(2) *Idem* and Jennings, H. (1938), *Sociometry*, **3**.
(3) Jennings, H. H. (1947), "Leadership and Sociometric Choice," *ibid.*, **10**, No. 1.
(4) Bronfenbrenner, U. (1943), "A Constant Frame of Reference for Sociometric Research," *ibid.*, **6**, No. 4.
(5) Northway, M. L. (1942), "Social Acceptibility Test," *ibid.*, **5**, No. 2.
(6) *Idem* (1946), "Sociometrics and Some Challenging Problems of Social Relationships," *ibid.*, May.
(7) Frankel, E. R. (1946), "Social Relationships of Nursery School Children," *ibid.*, May.
(8) *Idem* and Potashin, R. (1944), "A Survey of Sociometric and Pre-sociometric Literature on Friendship and Social Acceptance Among Children," *ibid.*, **7**, No. 4.

THE APPLICATION OF PSYCHOANALYTICAL PRINCIPLES TO HOSPITAL IN-PATIENTS.*

By John Rickman, M.D.

We are met to consider the application of psychoanalytical principles to hospital in-patients. Before we consider the applications it would be well to consider briefly, and have some agreement on, what those principles are.

First, the whole fifty years of psychoanalytical experience shows that one cannot separate research from therapy in this field of work. The technical aim of the therapy is to enable the patient to disclose as fully and as freely as possible the history of his development, including not least that of which he has been unconscious. This disclosure the doctor must meet with sincerity of purpose and dispassionateness, and he must not lose patience in the face of failure. These qualities are among those which are prerequisites in the research worker. The discovery of the causes and the solving of the problems of mental pain are not possible unless the patient experiences relief of that suffering in the course of his treatment; then he will co-operate in the research and in the therapy. This can be briefly summarized by saying "No research without therapy; no therapy without research," i.e., the patient's personal and particular difficulty has to be the subject of a special and personal investigation, personal both to the patient and to the doctor treating him.

The second point is that there is invariably a strong but unconscious defence set up against the resurgence of the past emotionally-toned experiences, and these defence processes operate both in the patient and in the doctor treating him; if the latter has not worked through his own past experience he will unwittingly co-operate with the patient's defences in greater or lesser degree, and this will nullify both the investigating process and the concomitant therapy. This work cannot be learnt from a book; it is a piece of living, i.e., an always changing experience.

The third point is that invariably there is disclosed a disturbance in those aspects of the patient's object relationships which in the widest sense we can call sexual and which, again, are unconscious. The kind of object relationship thus disclosed originates in infancy, and tends towards behaviour which is incompatible with the ordinary adult or conscious or social relationships.

The fourth is the most important of all for our present discussion. It is invariably found that the patient's behaviour is determined by two classes of tendency: the one is to adjust to his present environment (of this he is usually conscious), the other is to use the present situation to work through uncompleted emotional experiences of the past (of these he is invariably

* A contribution to a Symposium at the Royal Society of Medicine [Section of Psychiatry] 9 March, 1948.

unconscious) ; these two tendencies operate simultaneously. The aim of the psychoanalytical procedure is to discover and to facilitate the patient's re-experiencing these uncompleted and unconscious emotional situations in the relation existing between patient and physician and make them conscious. It is a new kind of social relationship which Freud devised and called the " transference situation," which is at once the instrument of research and of therapy. A therapy which does *not* give the development of this transference situation the highest priority (and the working out of present findings in it in terms of the patient's past experience by free associations) is by that much not using psychoanalytical principles, i.e. the measure of " psychoanalyticness " of a therapy depends on the degree of priority given to this process.

Now I have gone into these preliminary details, which after all are well known, because something important must be said which is not so widely realized ; these are positive statements about what occurs in psychoanalytic treatment, not about what must not occur. There is nothing in all this that is incompatible with the exhibition of sedatives, shock-therapy, surgical interference with the brain or other organs, not even with the restriction of social locomotion (certification). Any or all of these things are compatible with psychoanalytical therapy of the patient *provided*—this is a most important provision, particularly, most particularly, for the analyst—provided that every event is referred back to this peculiar kind of social relationship called the transference.

The more that the analyst discloses his own opinions or personality, the more difficult is it for him and the patient to discern what is transferred from the unconscious into the situation. For this reason the analyst and patient do not meet socially, nor does the analyst give advice. Further, it is a relation between two people. In out-patient analysis this is possible.

With in-patient psychoanalytic treatment there are complications because more than one doctor comes simultaneously into the doctor-patient relationship ; from a two-body it becomes a multi-body situation ; for example, the Medical Superintendent, the House Physician and the analyst *vis-à-vis* the patient. How does this affect the application of psychoanalytical principles? In essentials not at all, it only makes the unravelling of the transference phenomena more difficult. The role ascribed to each of these persons in the patient's current phantasy life has to be discerned separately and with their interconnections and interpreted to the patient. This is more difficult for the analyst than in the usual out-patient treatment, because with in-patient work these other doctors are in fact playing a social role in the analyst's as well as the patient's life. So both parties to the analytical relationship have more to cope with, but the principles of the work can be applied just the same.

We could summarize what I have said so far almost in three words : the work of analysis is essentially—like all scientific work—a-historical. True we deal with the reconstructions of the patient's past, but we see them " here and now " (the three words) in the present, here before us in the transference situation, now. It is the discovery of *all* the ingredients in the " here and now " on the part of patient and analyst which constitutes the essence of this work. Its success depends on the power to concentrate on the details and their

inter-relations in the " here and now " " There is no middle position " as an aphorist said, " between the ' here and now ' and the ' cut and dried '."

Before I conclude I want to add one word about co-operation between analyst and other doctors who are also involved in the medical care of the case. Such co-operation is not easy because in the transference situation itself the other doctors can play no direct part ; frustrated curiosity is always hard to bear. But when the patient (as may well happen) plays one doctor off against another the situation is apt to be exasperating. In the long run this usually rights itself if the doctors concerned can see the value of referring, and letting be referred back, everything that occurs to the cardinal situation of psychoanalytical research and therapy—the transference situation. What really counts is not where the work is done, but how thoroughly the essential principles are grasped and what priority they are given.

APPLICATION OF PSYCHOANALYTIC PRINCIPLES TO THE TREATMENT OF IN-PATIENTS IN MENTAL HOSPITALS.*

By W. Clifford M. Scott, B.Sc., M.D., D.P.M.

This paper has been written with the intention of illustrating the application of psychoanalytic principles to the treatment of in-patient psychotics by reporting the treatment of a female manic-depressive patient by psychoanalysis at the Cassel Hospital during 1936–38. Unfortunately no reports of intensive in-patient psychotherapy of psychoses in this country have been published. Little prolonged intensive psychotherapy of psychoses has been carried out in hospitals, apart from the Cassel Hospital, where for many years the staff was sufficiently numerous to allow most patients to have daily interviews of significant length. In the United States experimentation has been much more active. Recently Fromm-Reichmann (1947) has reviewed many of the problems encountered in the several Mental Hospitals where psychoanalytic methods of treatment are actively pursued. Rosen has reported daring and courageous experiments. He has reported (1946) the treatment of acute catatonic excitements by psychoanalysis—his chief innovation being the long interview. With one patient the first interview was 16 hours with a break of half an hour. He has reported (1947) favourable results from treating 38 male and female schizophrenic patients, the ages of the patients ranging from 15–49, the duration of illness before treatment ranging from 1 month to 27 years, and the duration of hospital residence ranging up to 11 years. The average daily hours of treatment ranged from 1 to 12, and the duration of treatment ranged from 3 days to 11 months. In my opinion the New York Psychiatric Institute which encouraged Rosen's experiments has fostered a technique about which much more will be heard.

The literature contains no reports of patients treated psychoanalytically in hospital with which I can compare the material I am reporting. Kaufman (1937) reported the successful treatment in hospital of two late-life manic-depressive depressions by psychoanalysis, but the technical problems dealt with by him differed greatly from those encountered by me.

My patient was 20 when treatment began in 1936. She was a first child, and was breast-fed for about one month. She sucked strongly, but obtained little, and often screamed herself to sleep. Owing to this she was weaned to the bottle, which she sucked well. The screaming ceased. At the age of 6 or 7 months she spoke a few words, and before 2 years was using complicated words and sentences. Her bowel and bladder were trained quickly and early. Solid foods were refused for some time, and she remained difficult about solid food for several years. By about 15 months she was weaned from the bottle to semi-solids. She put no toys to her mouth. Her further development was uneventful. A sister was born

* Slightly elaborated from a paper read on 9 March, 1948, at a Symposium on "Application of Psychoanalytical Principles to the Hospital In-patient" at the Royal Society of Medicine (Psychiatric Section), London.

when she was a toddler, and two brothers were born later. At 10 she had whooping-cough and mumps, and her tonsils were removed. At 11 she had measles and bronchitis. Her menses began at 16. No emotional reaction or change in her personality were observed in regard to any of these events. She progressed steadily through school, but was never considered to be doing her best. After finishing secondary school she went to College, both her parents having had a similar education. At college she met a woman whom she admired and to whom she wrote letters. This friend noticed that she was becoming more tense and depressed, and suggested that she should go to the Institute of Industrial Psychology for advice regarding the type of occupation which would most probably suit her. She was told that tests done there showed her to be of exceptionally high intelligence, and she was advised to seek medical treatment for her emotional state. The late R. D. Gillespie, whom she consulted, considered that she was on the verge of a serious depression, and advised treatment at the Cassel Hospital.

Her disposition had always been sociable with her family, but she was shy with new acquaintances, especially men. She never discussed her feelings, and under no circumstances showed any intense emotion. Until her going to college, piano playing had been a great interest. She gave it up because she felt she was not making any progress. During the few months preceding the beginning of treatment she helped at home while her mother was convalescing from the effects of an operation.

On admission to hospital she was tense and fidgety. She seemed to be continually on the verge of tears, but wore a forced smile. She did not speak much, and when talking spoke slowly and in a low voice. She complained of being fed up and of not knowing what to do. On being questioned she said that depression had been increasing for as long as she could remember and that, during the previous few years, depression had been worse. She stated that twice during the previous year she had seriously contemplated suicide by poisoning. Her physical condition was generally good. Her weight had decreased considerably during the previous year.

It was considered justifiable to attempt psychoanalysis as an experiment. During the progress of the analysis the following marked changes in interviews and in her adjustment to the hospital situation occurred. During the first weeks of treatment she was usually silent. During the next months she was almost absolutely silent; and during analytic interviews and for some time after interviews an anergic stuporous state and abnormal sleepiness occurred. Her occasional slight movements furnished material which allowed the analysis to progress. After about seven months' treatment emotional outbursts began to occur—at first at the end of interviews and later during interviews. At first these outbursts were "convulsive" and vaguely directed, and the type of affect was difficult to recognize. At times it appeared to me as if she were going to have a *grand-mal* convulsion. Such spells, which at first began at the end of interviews, lasted up to forty minutes, making it necessary for me to remain with her until she was able to leave the room without much difficulty. She had to be held at times, and the help of two nurses was required, owing to her strength.

Later the emotional outbursts were more definitely either of anger or of love. At this time she was more sociable in the hospital, and became friendly with a younger girl. She began to write letters, and these she brought with her to interviews. Later she brought drawings. At a later stage she was openly depressed and suicidal, and she cried during interviews. At other times her behaviour was excited and playful in a flighty, manic manner. She began to be more active outside analysis and became both more guilty and more actively a nuisance, attempting for a time to make the analysis impossible. She tried to interfere with the treatment given by me to other patients. Still later yelling and screaming accompanied her emotional outbursts, and she began to talk more during interviews. Following this her emotional outbursts became less frequent and less intense. She became more friendly with her family when she went home on visits. A friendship with an older man began, and later she became friendly with several young men of her own age. She secretly depreciated these men. Jealousy became more openly apparent. She began to show more interest in her personal appearance. She commenced making plans for the future, and was more guilty about the real hardship her treatment was causing her family. She decided to discontinue treatment and to start training as a secretary.

There was marked improvement in every way, including her sexuality. Masturbation had been first described in a letter written after about nine months' treatment. She wrote that she had tied herself up so that on moving she was hurt. She imagined she had a penis attached to herself and was having intercourse with a woman. During the second year of treatment the need to feel pain during masturbation gradually disappeared. Her activities became predominantly feminine. Her masturbation phantasies were then of normal intercourse and included phantasies of pregnancy. She began to think of most men as potential husbands.

The following sketches of important aspects of the analysis will illustrate the content of some of the problems such an analysis presents. Interviews were daily and lasted one hour. For several weeks interviews were prolonged to two hours, as I remained with her until the intense emotion which had begun during the interview ceased.

It was three weeks after treatment began before she was able to lie on the couch. The interpretations of the scanty material obtained during this period allowed the analysis to begin. From work with this and other similar patients I have come to believe that in psychoses, content, which may at first sight seem to be conscious, or at least preconscious, is often deeply unconscious. After more than a year's treatment I became convinced that the behaviour, which had been used as material on which to base interpretations during the first weeks, had been deeply unconscious.

She sat tensely and mostly silently, stating that she was afraid of what I would think if she spoke. I said that she was afraid that I would say something frightening such as had been said to her by others in her life. She said that she felt dead. I said that she wanted me to make her feel alive and not to frighten her as others had. She said she felt inferior. I said that she wanted me to help her lose this inferior feeling. She then caressed her leg and smiled. I said she wished to show me, but was afraid to tell me, that she was pleased. She told me she wanted to scream where I could not see her. I interpreted this as anger at her frustrated desire to show more pleasure than she had shown me by stroking her leg and smiling. I said she was angry partly because I asked her to put all she was conscious of into words, and partly because I had not shown pleasure at the way she showed me her pleasure—namely, by smiling and stroking her leg. I said that she wanted to protect me and herself from all she thought would happen if she screamed at me while she was watching me and I was watching her. She then began to stroke her legs quite tenderly.

She told me a dream:

> "Mother was dead and I had to care for the house. I was to have come here in a day or so. I wanted a husband and a baby, but I couldn't care for the food."

She gave no associations. She was silent and, after a time, asked me not to look at her. I connected the dream thought "I couldn't care for the food" with her difficulty in dealing with the analysis. I informed her that her difficulty in speaking and her wish neither to be watched nor to be heard screaming by me arose because she felt she could only say or show me something bad—something which she thought would make me act to her as others had acted when they had seen her do what she wanted to do or say what she wanted to say. She then became less tense, stretched, yawned and looked sleepy, and turned to the couch. I said that she had decided to sit instead of to lie, being afraid of what would happen if she lay and slept, and therefore could not watch me in order to protect herself. She then got up from her chair and lay down on the couch.

The analysis had begun by using not only the sequence of what she had said, but also by using the few movements and expressions of emotions she had shown. This appears to me to be similar to the minute attention paid in child analysis to the details and the sequence of the child's behaviour as a whole. In fact the work of those who started analysis of infants and children has in my opinion given the most important single impetus to new psycho-analytic work with severe psychoses.

A description will now be given of some aspects of the analysis of the stupor. Soon after beginning to lie on the couch she began to talk less, and finally only rarely spoke to me for several months. She lay motionless and her expression was blank. It was often impossible to know whether she was asleep or not. All

movements were very slow. After some weeks she began to touch a small rip in the upholstery of the couch near her left shoulder. I was sitting at her left. She touched the rip—she tucked its edges in, making the hole larger—she folded the edges together, making the hole seem to disappear, and at times she would leave it alone and roll over on her side to her right. Once after touching the edges of the rip and putting her finger in it she suddenly pulled her skirt down as far as it would go and lay on her back. I interpreted this as anxiety about masturbation. I said she seemed to feel that I would stop her masturbating, just as something within her had stopped her playing with the couch. I interpreted her shift to the genital pleasures of masturbation as a defence against the oral anxieties with which she had started the analysis. She became more active with the hole in the couch, but also generally weaker and slower; and she looked much sleepier at the end of interviews. She continued to be stuporous for some hours after interviews.

The next phase began when she suddenly arose and stuffed some paper into a window which was rattling in the wind. She did this energetically, and seemed to rouse suddenly from a stuporous sleepy state to do so. On lying down she returned to her former state. I told her that this strong reaction to a noise was to prevent it from harming either me or herself in the way which she thought the noises she was keeping in would harm either or both of us if she gave up the defensive weakness and sleepy silence. At the end of the interview she silently and vaguely clutched me, and strong convulsive movements developed. I thought that she was going to develop a *grand mal* convulsion. She seemed to be fighting with herself to hold something in. Her eyes and mouth were tightly closed. She eventually became weak and was shortly able to leave the room. I interpreted her behaviour as showing the contrast between her sleepy, stuporous state of anxiety at my being harmed and my harming her in revenge on the one hand, and her intense anger at my not giving her the help she wanted to ask for on the other hand. I related this to the early period when she felt her parents knew her wishes, although she had not spoken. This phase was followed by her bringing me a letter. In it she blamed me for making her want a husband and a baby. I linked this to the first dream she reported, and said that she was substituting me for her earlier acquaintances through whom she had first known of husbands and babies.

She then wrote of the fear she had had of the way her father had hugged her and kissed her. I said that she had also blamed her father for her wish for a husband and baby, just as she had blamed me for the content of the dream she had told me.

She then yelled loudly:

"I can't speak."
"You make me talk."
"I don't dare speak."

I said these were memories of what she had said when angry and memories of phantasies of talking when frustrated; for example, when her father wanted her to talk instead of act and when, during the analytic treatment, I wanted her to talk. A dream followed: "I vomited out of a window and was afraid you would touch it." This was linked to the mess that she had told me she was in (which she wanted me to clear up), to the noise she wished to expel (the window in the dream was the window where she had stopped the noise), and to her fear that I, as a useful external person, and the bad internal mess of vomitus would unite.

Her emotional outbursts then became much less vaguely directed and convulsive. They appeared more definitely as attacks of anger, in which she growled, scratched, kicked and bit. The analysis of the details of this behaviour convinced her that in her phantasies vomitus represented the me which she believed she had eaten in the first seemingly vaguely directed convulsive attacks. The wish to eat me now (since I frustrated her as her parents had in the past) became connected with much memory material—both of fact and of phantasy—concerning her parents and also her grandparents.

She became obsessed with the feeling that there was a lump of meat in her throat and, for a time, she was nauseated and was unable to eat much. These feelings became associated with memories of her bottle and memories of her father giving her the bottle. The emotional attacks became less simply attacks of anger and became mixed with love. She energetically tried to bite me in the genital

region and, when prevented, she tried to bite me wherever her mouth happened to be. This biting was more than an attempt to bite a bit off my body. She stated and wrote that she wanted to eat her way into my body. This behaviour was interpreted as a desire to swallow and control, mixed with or followed by a wish to eat her way into the person attacked and to be eaten by the person attacked in order to preserve this person from being destroyed by her.

Shortly after this she began to write letters about her masturbation and to draw scenes of masturbation. She described a series of women she had secretly admired. As soon as the interpretation was given to her that she wished to control my sexual behaviour from within me, as she had previously tried to control her father's sexual behaviour with her mother, the masculine identification, which had been brought about both by oral incorporation and by trying to eat her way into me lessened. These different attitudes, which had each led to a masculine identification, were seen at the same time. Phantasies of having sucked, bitten and swallowed her father's penis, and of having eaten her way into him and of having been eaten or swallowed by him, all led to a masculine identification—in the first case due to being controlled from within by the man she had taken in, and in the second case by controlling the man she imagined she lived within. She then became able to describe considerable guilt regarding her attitude to several women. It now became possible to link her previous actual indifference to her mother and father to her anxieties about and her denial of her phantasied control over their mutual behaviour to each other.

Her wish to restore to other women what she had taken from them was first seen in a change in the emotional outbursts. She now became more gentle and tender. At first it was seen as a wish to be loving to a man, so that he could be loving to another woman. It was only much later that this was understood in terms of feminine wishes or of a feminine identification.

Up to this period there was little indication of improvement in her everyday life, and several of my non-analytic colleagues thought that her reactions furnished an example of analysis worsening a psychosis. My judgment was, however, that the changes in her clinical state were clearly related to a transference situation in the analysis, which was gradually becoming more conscious and was gradually altering. In my opinion she appeared to be in a state nearer normality than before the onset of the analysis. The continuance of and the progress in the analysis itself at this time seemed to me to be indicative of improvement. In the analysis of psychoses progress within the analysis has to be relied on as there may not be any other standards or criteria on which to depend.

After the period described her condition in interviews began to vary much more frequently and quickly. The alternations between feminine and masculine identifications occurred very rapidly. They could be understood in terms of the swiftly changing relationship of the various people and objects in her phantasy.

The following is an example of part of an interview in which such very rapid changes occurred. At a time when, on the whole, suicidal tendencies were prominent, her voice once suddenly became soft and she tried to caress, fondle and tenderly embrace me. She said softly that she could never leave me. Then she suddenly yelled in a state of fear," Don't look at me—you are too nice." This was interpreted as a wish to preserve the image of a loved person by projection—at that moment I represented a loved person. She could only preserve her love by externalizing it. Immediately after this she pleaded with me in sorrow, in a rather vague but intense manner, to kill her. I interpreted this as the wish that the good object, which she had just wanted to preserve, would kill the hating person in order to protect the loved person from the hating person. She at once became more energetic and lost her vague look. She stated sorrowfully that she hated me, that I had no feeling and that I was dead. I interpreted this as a feeling that she could now tolerate feeling both hateful and loving and could tolerate imagining that I was both lovable and hateful. She then said sorrowfully that, if I did not love her, no one would. I related her sorrow to the new position with regard to me, and her hopelessness to the earliest situations of sorrow when she knew very few people, and if they appeared destroyed or unloving, the whole world seemed destroyed or unloving.

In later interviews, when the transference was to a nursing mother and when memory material was closest to the earliest weeks (when, according to her history, she was ill-fed and screamed) she tried to make me wear cushion as breasts, tried

to expose my breasts, and had phantasies regarding how I could grow breasts. She yelled and choked in her bouts of anger, sucked many objects, and often smiled in her attempts to love, and described oral sensations, which were accepted as memories of feelings in her mouth before she had any teeth. After 18 months' treatment she drew very childish representations of a wild child. In the next interview she tried to draw a mess which she felt inside herself. What she drew was at first a sheet of scribble, but the form gradually changed during about 20 minutes. I interpreted her activity as the wish to remake her mother's breast which she believed she had eaten and to restore it to me in place of her mother. At that moment she became conscious of her drawing as a fair representation of a full-sized breast. Her relief was great, and her associations were immediately of good relationships between mother and child. She then drew a happy baby.

Writing and drawing proved very useful during this analysis. Writing was sent or brought to me from about the seventh month. After the sixteenth month less was brought. I always accepted the writing and tried to read it aloud in interviews and to interpret it if possible as I went along. In general, writing was interpreted as a projection acting as a defence against oral activities. Occasionally it was related directly to the derivatives of play with her stool. Once she wished to write her name on my body, and this could be related to play with her stool. More intense anxieties were analysed in connection with writing being used as a secret and silent defence against oral situations. Earlier in the analysis she brought writing in a secret code and soon afterwards began to bring drawings without writing. She brought mirror-writing and a small mirror which she kept in her hand, thus enabling her to control whether I could read what she had given me by letting me use the mirror.

The drawings were interpreted as the projection of memory and of phantasy material. Associations and descriptions of the drawings were requested by me, but if, as was usually the case, none were obtained, I interpreted them, as far as I could, on the basis of content in connection with the situation at the moment. When she began to draw and scribble during interviews, it was possible to interpret the type of activity and sequence of activity as well as the content.

After discharge from hospital she continued treatment for about 18 months. She was well when last heard from early in 1948.

The preceding outline of the type of patient, the sketch of the general progress during treatment and the few details of samples of the analysis is an attempt to condense several hundred hours' work into a short paper.

This type of psychotic patient ordinarily has a very serious prognosis. Homosexuality, masochistically perverted masturbation, and manic-depressive depression slowly worsening from adolescence to twenty are symptoms usually considered prognostically serious. Nevertheless if time is available, if adequate nursing help is available, if colleagues are co-operative, and if psychoanalytic methods are persistently used, great improvement in such a patient's condition can occur, and material of great value as far as psychopathological research is concerned may become apparent.

References.

Fromm-Reichmann, Frieda (1947), "Problems of Therapeutic Management in a Psychoanalytic Hospital," *The Psychoanalytic Quarterly*, **16**, 325–356.

Kaufman, M. Ralph (1947), "Psychoanalysis in Late-Life Depressions," *ibid.*, **6**, 308–335.

Rosen, J. N. (1946), "A Method of Resolving Acute Catatonic Excitement," *Psychiat. Quart.*, **20**, 183.

Idem, (1947), "The Treatment of Schizophrenic Psychosis by Direct Analytic Therapy" *ibid.*, **21**, 3–37.

THE APPLICATION OF PSYCHOANALYTICAL PRINCIPLES TO THE HOSPITAL IN-PATIENT.*

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There is no need for re-stating, in general terms, the importance of the psychoanalytical contribution to psychiatry. This has been discussed here on several occasions, and possibly more seriously than in any other society of psychiatrists. I am referring to the papers read to this section by Bernard Hart (1), David Forsyth (2) and Edward Glover (3). They form a most interesting introduction into the problem of the relationship between psychiatry and psychoanalysis. Psychoanalysis has not been the main topic of discussion in this section since Edward Glover's address on the application of psychoanalytical principles in psychiatry thirteen years ago. Since then the psychiatric scene has changed out of recognition. We have entered an era of great therapeutic activity. The hospital in-patient with whom we are concerned to-day has been subjected to a variety of physical methods, and the campaign has still not reached its peak of intensity. It is too early, at this stage, finally to assess the therapeutic value of those treatments, but we can say this much already: it is most unlikely that they will save us the trouble of studying mental illness the hard way. Psychiatry cannot afford to neglect any approach that promises to contribute to the understanding of mental phenomena. It is against this background of psychiatric developments that psychoanalysis has again been chosen for discussion here.

Considering that there are a great many activities, and a vast number of problems in hospital work to which psychoanalytical principles can profitably be applied, it would be difficult to attempt a comprehensive survey in the limited time available. I shall try to give you a personal account instead. I want to tell you how much help psychoanalysis has given me in my clinical and research work as a psychiatrist. I am going to talk mainly about clinical observations on mental hospital material, but I shall from time to time take the liberty of commenting on problems that appear pertinent to the subject under discussion. I should like to say at once that nothing is further from my mind than the ambition of setting a standard for the application of psychoanalytical principles in psychiatry. How widely and how deeply these principles will direct and pervade the activities of a psychoanalytically trained psychiatrist will depend not only on the amount of work he is called upon to do, much of which may not lend itself to the analytical approach, but also on his personal leanings and talents. I have no doubt that many of my psychoanalytical

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colleagues would have delved deeper into the unconscious than I did in dealing with some of the problems I tried to elucidate. However, they must not forget that most of the case material in the mental hospital is not accessible to analytical treatment in the strict sense. The psychoanalysis that can be practiced there is in the main applied psychoanalysis.

Dr. Rickman, in his opening remarks, has stated the principles that govern the doctor-patient relationship with admirable clarity. They apply irrespective of whether or not psychoanalytical treatment in the strict sense is attempted. It is true that the basic concepts of psychoanalysis have been evolved in the psychoanalytical treatment of neurotics. However, it is well to remember that most of Freud's contributions (4) to the psychological understanding of the psychoses were based on material that had not emerged in the psychoanalytical treatment of psychotic patients. Such highly important contributions as the papers on paranoia and melancholia, are really examples of applied psychoanalysis. This proves that the psychoanalytical treatment in the strict sense cannot be regarded as the only legitimate source of progress in clinical psychoanalysis. This brings me to another point, the importance of which cannot be emphasized too often, especially among psychiatrists. Even now there is a tendency amongst psychiatrists to judge the significance of psychoanalysis on the basis of its value as a therapy, and to overlook the fact that psychoanalysis has, as Ernest Jones (5) put it, provided psychiatry with an interpretative, dynamic and genetic point of view. I hope that I shall be able to illustrate the applications of those aspects to you. Nevertheless, I want to say a word about therapy.

I have treated with psychoanalysis cases of very severe obsessive illness and anxiety states in hospital. The majority benefited from the treatment, but I do not want to enter into a discussion of therapeutic successes and failures on this occasion. Dr. Rickman has pointed out the complications that are apt to arise when more than one doctor is involved in the medical care of a case in hospital. I can fully confirm his observations. These difficulties which originate from the transference situation, are apt to arise when the doctor who is carrying out the treatment is himself in charge of the ward to which the patient belongs, and is thus responsible for his conduct in hospital, his welfare and his discharge. The fact that the patient is bound to meet the doctor outside the treatment on the ward where he has to share him with others complicates the transference situation very considerably. The institution of the visiting psychotherapists which is being adopted by many hospitals meets those difficulties admirably. They do not arise to any marked degree where only superficial routine psychotherapy is given to in-patients. In that case the fact that the treatment is carried out by the doctor in charge of the ward may even have considerable advantages ; but he has to watch the transference phenomena carefully.

My experiences with systematic psychoanalytical treatment of psychotic conditions in hospital are scanty and inconclusive. You know that Freud has expressed the view that those patients are not accessible to psychoanalytical treatment, as they are unable to form a stable transference relationship. This has not deterred a number of psychoanalysts from attempting psycho-

analytical treatment of psychoses in hospital. It is clear that in the treatment of psychotic conditions, the analytical method has to be modified, and the technique advocated for those cases has much in common with child analysis. I am not a therapeutic enthusiast, but I see no reason why attempts at psychoanalytical treatment of selected psychotic cases should not be made by properly trained psychiatrists, especially under hospital conditions. Such studies are likely to yield interesting material, and are most unlikely to do harm. There are other reasons why such work could be very important. It would, for instance, be most interesting to study in this way selected cases before and after leucotomy. I would expect such investigations to cast some light on the effect of the operation on psychotic conditions. They could verify and elucidate certain clinical impressions, such as that leucotomy changes the schizophrenic from an introvert into an extravert. Such investigations could be very profitable even if they were confined to patients who had not made sufficient improvement to leave hospital.

I think I ought to say here a few words about the psychoanalyst's attitude towards current physical treatments. It is perhaps as well to distinguish between his attitude as a scientist and as a therapist. Psychoanalysis as a mental science is based on biological concepts. The prominence that it gives to the instincts implies that mental illness can be influenced by physical means without the detour over psychological mechanisms. It is therefore, quite natural that psychoanalytically trained psychiatrists have co-operated wholeheartedly in the administration of physical treatments, which are not incompatible with psychoanalytical principles. However, methodologically, and in the underlying approach, they are, of course, extreme opposites, and it is not unnatural that some psychoanalysts have expressed themselves strongly against their use. In a discussion on the application of psychoanalytical principles in mental hospital, it is perhaps not inappropriate to try to understand that attitude. The psychoanalyst views abnormal behaviour as manifestation of a struggle between conflicting forces, and he regards many of the most spectacular symptoms as indicators of a healing process. In his attempts to intervene therapeutically the psychoanalyst tries to modify and harmonize those forces, to change their direction and their objectives, and thus help the patient to adjust to reality. The psychoanalyst believes in the power of love and reason. In spite of everything that has been said to the contrary about him, he is an optimist and a humanitarian. How can it be otherwise, since he constantly discovers the child in all of us, especially in those suffering from mental illness ?. The psychoanalyst is fundamentally a strategist. He feels about the more violent forms of physical treatment the same as a highly trained military strategist must feel about atomic warfare. One may disagree with him, but his convictions deserve respect especially if they are recognized as honest prejudices (6). They can do nothing but good if they remind us of an approach to mental suffering that will always rank as a great scientific and human achievement.

Psychoanalysts have not been unmindful of the fact that full analytical treatment is available to only very few, and some have tried to evolve shorter methods. The most recent systematic attempt on those lines is that of

Alexander and French (7), but for the sake of clarity, those treatments which do not use the analytical technique had better not be called psychoanalysis.

Schilder (8) was guided by psychoanalytical principles in elaborating his method of group psychotherapy. In this country, Bion and Rickman (9), and especially Foulkes (10), have made valuable contributions to the theory and practice of group therapy based on analytical principles. That treatment is the subject of intensive research in many places, and I have no doubt that important developments will come from this new method which has already widened the scope of psychotherapy in hospital considerably. Like individual psychoanalysis, it encourages free play of emotional forces by the adoption of a group association method. I have practiced this technique with mixed groups of recoverable patients in mental hospital, and found it most interesting, and helpful. Kräupl (11) has recently reported on work with similar groups. Like everybody brought up with the concept of the individual interview, I had to overcome a certain resistance to that kind of treatment myself. I fully agree with those who have pointed out that in the group situation, certain behaviour features emerge which individual treatment alone might not have brought to light.

I do not want to discuss group therapy beyond saying that, as in individual treatment, the method has to be modified when one is dealing with psychotic subjects. The psychiatrist conducting the group has to be more active, and to intervene more often than in groups consisting of neurotics only. Conducting such a group demands considerable psychiatric and psychotherapeutic experience. I have found it particularly helpful in cases of schizophrenia entering a remission. Often the group situation acted as a stimulant for the individual interview. On several occasions the patient's reactions in the group situation helped me in arriving at a correct assessment of their improvement, usually proving that the patient was really better that I had assumed from the individual interview. My fear that psychotic patients would talk about their delusions in the group spontaneously did not materialize. It was surprising how discreet they were in this respect, and how open in other respects.

Group therapy on analytical lines is of great help in assessing how much of the social personality is preserved, especially if combined with a certain amount of individual treatment. It is hard work, but worth while. Like every psychotherapeutic technique, it is not congenial to every psychiatrist.

One of the advantages of group therapy is the possibility of having another colleague present at the sessions, if possible, as an active participant. This means that it can be learnt by direct observation, and considering the difficulty of teaching psychotherapy this is an important point.

So far, I have been concerned with some of the applications of psychoanalytical principles in the treatment of the hospital in-patient. There are other applications about which I do not intend to speak, such as the various methods of achieving abreaction with the help of drugs.

Having given some examples of the application of psychoanalytical principles in the treatment of the mental hospital patient, I would now like to refer to the importance of those principles for the understanding of abnormal behaviour and symptoms. But we cannot expect psychoanalysis to

explain any of them fully and from every angle. There is no method of approach, however indispensable, that can by itself solve all the complex problems of mental phenomena.

Let us take but one instance—*folie à deux* will serve ; let us restrict that concept to the adoption of psychotic thought contents by a person who is not himself suffering from mental illness. The occurrence of this condition is usually regarded as due to increased suggestibility on the part of somebody who lives in close community with the psychotic subject. Lack of judgment owing to low intelligence, and constitutional predisposition have also been blamed. These explanations are far from satisfactory. *Folie à deux* belongs no doubt to the suggestive phenomena, but this statement only begs the question. It does not help us to understand why it happens in an individual case, nor are the victims particularly suggestible in their relations to others. The cases I studied were far from unintelligent. Common predisposition, even if it could be proved in all cases, could not explain the identity of the delusions in paranoid cases. In fact, paranoid patients are far from suggestible, and we know that psychotics living together in hospital over many years hardly ever adopt each others' delusions. To understand the *folie à deux,* we have to investigate carefully into the relationship between the persons concerned, their personality make-up, their conscious and, if possible, their unconscious tendencies, and the nature of the thought contents transmitted. I made such investigations with Hartmann (12) in a series of cases, all of *folie à deux,* and all with paranoid states. The mechanism underlying the process is that of identification as understood by Freud. Under normal conditions, gross identification does not take place in adult life, but it is all-important in childhood. We found that in those cases a strong tendency to identification had developed out of feelings of guilt which caused the passive partners of the group gradually to sacrifice reality. That strong sense of guilt had, in those cases, grown out of the feeling of having failed sexually and socially, and also out of repressed aggression towards them. The contents of the delusions, too, proved significant. They were ideas which could be traced as unconscious fears in the passive partner's mind. The adoption of the delusions meant sacrifice and punishment. We also turned our interest to the active partner of the group, the one from whom the delusions originated. We found in every case a character type with marked sadistic features, demanding the sacrifice of complete identification, and deriving strength from the fulfilment of those demands. When finally the spell was broken, and those who were the victims of their suggestive power freed themselves from the delusions and regained their independence, the condition of the paranoid patients deteriorated, and it appeared that with the loss of unity with the others, their resistance to complete withdrawal from reality failed rapidly. This suggested that their eagerness to make others share their delusions had been the expression of a defence reaction against the threat of isolation. This is only a poor sketch of what we found in those cases. Instead of accepting the apparently obvious, namely, that the man who takes over his wife's delusions is just more than usually gullible, we uncovered a constellation of conflicting forces which had been at work over years, and finally resulted in

the sacrifice of reality. This may not be the whole story, but it is at least part of it. The method of investigation in those cases was careful exploration by psychiatric interview.

The discovery of a certain mechanism underlying abnormal behaviour in a number of cases does not mean that that mechanism is the only one that can cause it, and we have to be careful with generalizations. However, once one has established a certain dynamic constellation in a pathological case, however rare, it is often not difficult to recognize it in its milder forms, e.g. it can be said that our observations in the cases of *folie à deux* might be of help in the understanding of some other suggestive phenomena.

There are many other forms of abnormal behaviour which the application of psychoanalytical principles has helped to elucidate. I found the psychoanalytical approach most valuable in studying fugue states with the impulse to wander (13), and a variety of other psychopathological phenomena. Psychoanalytical knowledge, especially in its dynamic aspects, has helped me in the study of the interplay between obsessive-compulsive symptoms on the one hand, and depressive and schizophrenic reactions on the other hand. It enabled me to understand how interaction between abnormal mechanisms of different dynamic qualities, the one tending to disintegration, the other to preservation of the personality, is apt to modify the clinical picture, and the course of the psychotic process in individual cases. After I had established those observations on a considerable case material (14) with the help of psychiatric methods, I discovered to my satisfaction that Edward Glover (15) had come to similar conclusions in his psychoanalytical work. I think that such studies are of great importance to the psychiatrist. Prof. Kallman (16), the eminent American geneticist, has recently pleaded for concerted investigations into all the factors which are apt to modify or to nullify the effects of hereditary predisposition. The psychoanalytic approach, with its emphasis on dynamic as well as environmental factors, can be of great value in the study into such problems.

I have given you some examples of the applications of psychoanalytical principles to the clinical material that we meet in the mental hospital, and I hope that I have been able to demonstrate the value of the psychoanalytical approach. Psychoanalysis has contributed a great deal to the knowledge of psychotic mechanisms and to the understanding of psychopathological products such as hallucinations and delusions by deciphering their unconscious meanings. It is a pity that workers in the mental hospital who have the ideal material for such studies at their disposal have taken so little serious interest in those problems.

In a discussion such as this, it is not out of place to devote a few remarks to the significance of psychogenetic propositions in psychoanalysis. They attempt, as Hartmann and Kris (17) have pointed out, to establish a causal relationship between the individual's retreat pattern in conflict situations and early impressions in which the pattern was gradually formed. In other words, "they try to answer the question when that particular form of reaction was learned or adopted first, and why a certain conflict was solved in a certain manner." You see, psychoanalysis may be able to describe how a condition

under observation has grown out of a person's past, but may not necessarily be able to say why it has done so. This applies particularly to the psychoses. The conception of psychogenesis, therefore, does not imply that a condition which we can trace back to its roots in early childhood is necessarily caused chiefly by environmental experiences at that period. But that is exactly the idea that most people have of psychogenesis. To psychoanalyse a patient means to them to set out to find certain environmental experiences or constellations which are solely responsible for the illness. This is a misconception of psychogenesis.

Psychological understanding of a mental illness from the psychoanalytical aspect does not even exclude the possiblity that it is an organic disease. On the other hand, the organic nature of an illness does not imply that it cannot be influenced psychologically. I am referring to some psychosomatic conditions. Viewed from this angle, the difference between physiogenic and psychogenic is not fundamental, but we must not over-rate the impressionability of the organism by psychological means. Whether it will fall to the psychoanalysts to give the final answers to the question of the cause of mental illness we are unable to say, but psychoanalysis will certainly be indispensable in helping to formulate the problems and to shape the answers.

From what I have said about the biological foundations of psychoanalysis it is clear that it is not incompatible with any other scientific approach to mental illness. Masserman (18) and his school have shown by their experimental work that the psychoanalytical and reflexological approach can be co-ordinated with great profit. It is felt by many that the neurological approach to mental illness from which they expect the final clarification of its mysteries is incompatible with psychoanalysis. The view has been expressed that the occurrence of complex psychopathological symptoms in cases of organic brain lesion has proved the futility of psychoanalysis. I would like to demonstrate to you that, on the contrary, psychoanalytical knowledge can be of help in the elucidation of certain symptoms of organic brain lesions. In entering the precincts of neurology I am not aware of any trepidation, nor do I feel that, to gain admission I have first to try to raise one or the other mental phenomenon to the dignity of a reflex. Having been brought up as a "Neuropsychiatrist" and having had the great good fortune of training under Paul Schilder, I see no difficulty in combining the neurological and the psychoanalytical approach.

When post-encephalitic sequelae were first studied, the occurrence of obsessive-compulsive symptoms, especially during the oculo-gyric crisis, aroused considerable interest. I studied a series of such cases, and was able to make some interesting observations (19). In those patients, the organic illness had caused an impairment of the equilibrium between the libidinal and destructive tendencies, resulting in a constellation not unlike that found in obsessional illness. I pointed to the interesting fact that obsessive-compulsive phenomena had been described only in such cases of brain lesions in which those parts of the brain related to the control of instincts were affected. It does not, of course, follow from these observations that obsessive-compulsive symptoms are always due to organic lesions, but it does mean that the

anomalies in the instinctual sphere to which they are related may sometimes be due to such causes.

Knowledge of psychological mechanisms discovered by psychoanalysis has helped me in the study of the body image, of the symptom of unawareness of physical disability and of such primitive phenomena as echo-reactions. Schilder and Pötzl have pointed out that certain features in aphasia could be understood in the light of mechanisms described in psychoanalysis, and this is not surprising. If we assume that psychoanalysis has something to say about the structure and functions of the mind, there is no reason why it should not be able to throw light on those functions when they are impaired by organic lesions.

I hope I have not digressed from the subject of our discussion. It is true, I have left the in-patient behind for some time, but I have been talking about his problems and have tried to contribute to the understanding of principles the wider application of which would make the mental hospital an even more interesting place than it is already.

Psychoanalysts do not claim a monopoly for their approach in psychiatry. They do claim, however, that for a great number of psychiatric problems, theoretical and practical, their approach is indispensable. I am looking forward to the time when more psychoanalytically trained psychiatrists will work in mental hospitals, and take part in the great work their colleagues are doing there. How and to what extent the psychiatrist who is not psychoanalytically trained can and should apply psychoanalytical principles is a very important question, but it lies outside the scope of to-day's discussion. I would only like to say that he should refrain from doing so, without having given careful preliminary thought and study to those principles.

Some of you may feel it a bit unfair that I have dwelt at some length on the misconceptions existing among psychiatrists about psychoanalysis, but have not even mentioned the misconceptions that exist among psychoanalysts about general psychiatry. They are very considerable, and would need much more time to discuss than I have at my disposal. I can assure you that those among the psychoanalysts who have general psychiatric experience are doing their best to help their colleagues towards an understanding of the psychiatrist's problems.

Psychiatry and psychoanalysis have too long been divorced from each other. The benefits that would come from closer co-operation, based on mutual understanding and respect, would be very great indeed.

References.

(1) Hart, B. (1932), *Proc. Roy. Soc. Med.*, **25**, 188.
(2) Forsyth, D. (1932), *Proc. Roy. Soc. Med.*, **25**, 1200.
(3) Glover, E. (1935), *Proc. Roy. Soc. Med.*, **28**, 695.
(4) Freud, S., *Coll. Papers*, Vols. III and IV. London.
(5) Jones, E. (1938), *Papers on Psychoanalysis*, 495. London.
(6) Winnicott, D. W. (1947), *Brit. Med. J.*, **1**, 688.
(7) Alexander, F., and French, T. M. (1946), *Psychoanalytic Therapy*. New York.
(8) Schilder, P. (1938), *Psychotherapy*. London.
(9) Bion, W. R., and Rickman, J. (1943), *Lancet*, **2**, 678.
(10) Foulkes, S. H. (1946), *Lancet*, **1**, 303.

(11) KRÄUPL, F. (1947), *J. Ment. Sci.*, **93**, 613.
(11*a*) *Idem* (1948), *Ibid*, **94**, 77.
(12) HARTMANN, H., and STENGEL, E. (1930), *Jahrb. Psychiat.*, **48**, 164; (1931), *Arch. f. Psychiat.*, **95**, 584.
(13) STENGEL, E. (1939), *Brit. J. Med. Psychol.*, **18**, 250; (1941), *J. Ment. Sci.*, **87**, 512; (1943), *J. Ment. Sci.*, **89**, 224.
(14) STENGEL, E. (1945). *J. Ment. Sci.*, **91**, 166.
(15) GLOVER, E. (1930), *Brit. J. Med. Psychol.*, **10**, 226.
(16) KALLMAN, F. J. (1945), *Lancet*, **2**, 445.
(17) HARTMANN, H., and KRIS, E. (1945), *The Psychoanalytical Study of the Child*, **1**, 1. New York.
(18) MASSERMAN, J. H. (1946), *Behaviour and Neurosis*. Chicago.
(19) STENGEL, E. (1934), *Jahrb. Psychiat.*, **52**, 236.

HOMICIDAL INCIDENCE IN THE DEPRESSIVE PSYCHOSES.

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Introduction.

Although homicidal tendencies are well recognized in the depressive psychoses, this medico-legal aspect of the illness receives only cursory mention in text-books, e.g. Henderson and Gillespie and Noyes, if it is referred to at all. Inasmuch as it is on this most serious complication that the psychiatrist is most liable to be asked to give evidence in court, there would seem to be good reason for examining the factors leading to such behaviour, and comparing them with similar data from non-depressive homicides. It is hoped that these notes will show a behaviour complex peculiar to the melancholic subjects.

Where possible, in the series of Tables which follow, the facts for the depressives will be given side by side with the non-depressive group, for easier contrast or comparison.

The psychopathology will not be discussed because it has not been possible, for obvious reasons, to display it in the control group, and also because, no matter how interesting it may be to the psychiatrist, it is doubtful if it would ever carry as much weight as would objective and observable facts, with those having a non-medical interest in these cases.

Material.

Homicidal depressive states are not very common, and consequently it is difficult to obtain a large enough series to make the inferences drawn from it indisputable. Careful examination of many hundreds of depressive states admitted to an acute mental hospital has brought to light only 20 in which a definite act was perpetrated; but since interest in this subject was stimulated, the lesser evil of homicidal thoughts in depressive cases has been found much more commonly than was previously supposed, though this can only be brought to light by direct questioning because the patients will refrain from spontaneously mentioning this, even when they are quite willing to admit to suicidal tendencies. The homicidal cases then consist only of those in which a definite act was committed. The control group consists of an unselected number (29) of persons convicted of homicidal acts, none of whom was judged to be insane medically or in the legal sense at her trial. They may be described as normal criminals, and were not dealt with psychiatrically in any way, either at the time of their trials or in the immediate periods following. Since

experience has shown that women depressives are more prone to homicidal acts than men, the whole of the control group consists of women.

It will now be convenient to examine the material in more detail.

The sex incidence has already been referred to and needs no further elaboration, except to say that of the 20 cases here considered only one was a man. This bias to the female side is probably exaggerated, but a careful perusal of case-sheets always resulted in many more females coming to light than males.

TABLE I.

	Average age.	Age limits.
Depressives	29 years 6 months	21–48
Non-depressives	27 years 7 months	16–54

This table deals with the age of the cases at the time that the crime was committed. It will be seen that the average age of the psychotic and control group is approximately the same, i.e. the latter twenties, but that the extremes show a much wider variation in the control group, which is conspicuous by the lower limit of 16. To make this somewhat clearer, a second table was compiled, showing the incidence in 5-year age-groups.

TABLE Ia.—*Age-Groups.*

	Under 20	21–24	25–29	30–34	35–39	40–44	45–49	50–54
Depressives	0	25%	25%	35%	10%	0	5%	0
Non-depressives	24%	21%	17%	14%	10%	10%	0	3%

Several interesting differences between the two groups now come to light. Firstly, it will be seen the age-group with the highest percentage in the psychotics is 30–34, whereas in the non-psychotic group 16–20 is the corresponding period. Moreover, before the age of 25 only 25 per cent. of psychotics have occurred, whereas in the non-psychotics the figure is 45 per cent. After the age of 40 there is a decline in both types. The significance of these figures can be interpreted in two ways, of which the second is, in fact, a corollary of the first, viz., (*a*) the reason for homicide arises at a later age in the depressives, and (*b*) this is due to the fact that depressive psychoses do not as a rule show themselves until after the age of 20. It will also be seen from these age-groups that ages up to 34 account for no less than 85 per cent. of the depressive homicides. The reason for this is that this symptom is much more frequent in first attacks of depression than in subsequent ones. The significance of this will be referred to again later.

TABLE II.

	Married.	Single.
Depressives	90	10
Non-depressives	55	45

The next consideration with which this paper is concerned is the civil state of the two types under consideration. Of the depressives 90 per cent. were married, whereas only 55 per cent. of the controls enjoyed this status.

Amongst the unmarried group we find only 10 per cent. psychotics and 45 per cent. of non-psychotics.

TABLE IIA.—*Civil State.*

	Married.	Single.	Widowed.	Separated.
Depressives	90%	10%	0	0
Non-depressives	14%	45%	0	41%

A subclassification of this, as in Table IIA, in both groups is of great importance, for the 55 per cent. of married cases in the control groups whittles itself down to 14 per cent., since the remaining 41 per cent. were separated from their husbands. Separated, it should be added, is here used in the physical sense, whether or not this state of affairs had been legalized. The 90 per cent. of the depressives could not be so divided—there were no separations.

Social psychiatric histories taken on the depressive cases confirm these figures, and it is monotonous to find that these unfortunate women were, up to the time of their illness, leading very ordinary contented married lives. With this important difference in mind between the depressive and other homicides, it will here be convenient to consider the victims of their assaults. This factor has been classified in Table III.

TABLE III.—*Victims.*

		Child.	Children.	Family.	Friends.	Others.
Depressives	Married		100%	10%	..	..
	Single	50		..	50	..
Non-depressives	Married	67 (100% illegitimate)		33	..	..
	Single	78 (89% illegitimate)		15	8	..
	Separated	84	8	..	..	8
		100%	100%			
		illegitimate				

In examining these figures some very important points are brought to light. For the sake of emphasizing these differences the above classification was adopted. It will be seen at once that the whole of the married depressives have attacked members of their own family, and that it is always the children who suffer, with, on occasions, other members of the family as well. At first sight it is difficult to see the similarities between the married and the single group, especially when one finds a single woman attacking friends, but in this case the patient had left her own family and lived with her victims, who had in fact taken the place of her own kith and kin, and were the recipients of all the affection this unfortunate woman was able to give. In the case of the single woman who kills her child, the circumstances are not dissimilar when one knows that the woman was genuinely fond of the infant.

But the depressive does not necessarily attack the whole of her family, and it would seem worth while trying to discover just why the family are attacked. It will at once be obvious that within the circle of any happily married woman the family is naturally those of whom she is most fond, and we have seen that she directs her homicidal trends to these. It is not surprising that just as her family is the centre of her affections within her circle, so within the family she may lavish more affection on one member than another, and from what has already been said this over-loved member will be the victim. The following two cases will serve to illustrate this:

D. N. T— was a married woman, aged 33. She left an unpleasant family circle to marry a widower with 2 children, and was described by those acquainted with her as an excellent "mother" to these children. In the course of time she became pregnant and the confinement satisfactorily concluded. Within a short space of time after leaving the hospital, before she had fully recovered her physical health from the confinement, the following incident took place. The husband had had his breakfast one morning and sent the children by his first marriage to school. As his wife was still in bed he went to see her before going to work, and on entering the bedroom found his wife hugging the baby and fussing it as any new mother will. The father departed for work with no idea of the impending tragedy. When left alone this woman attempted to kill herself and the child by coal gas poisoning, and when this failed strangled the baby with a pyjama cord. It would be difficult to imagine a better example of a woman killing the one person of whom she was most fond.

M. L— was a married woman of 32 with a son aged 6 and a daughter 2 years old. She was well known to be fonder of the daughter than the son. One day she was interrupted by her husband in the act of suffocating the daughter after she had taken some disinfectant herself.

In contrast to this it will be noticed that, in the control group, although the number of crimes directed against the children are high these children are largely illegitimate, and the mother, instead of killing the one of whom she is most fond, tries to rid herself of what to her is a hindrance and inconvenience. The following two cases to contrast with the depressives may be used for illustration:

Case XXV.—Married woman, aged 35. She was delivered of an illegitimate child in a friend's house. Her husband was unaware of this and she was afraid to tell him, so on her way home she put the infant in a sack and threw it in a lake in a park through which she was walking.

Case XXXII.—A single woman of 32 gave birth to an illegitimate child. She made efforts to get it adopted, and when these were unsuccessful undressed the infant and dropped it in a river. In this last case the woman made two attempts to get rid of her encumbrance, and her determination in this direction may be judged when it is realized that at the time of drowning it was only 7 weeks old.

Passing from the difference in the two types of victims, we may pass to a consideration of the commonest accompanying symptom found in the depressive cases. This is the well-known tendency to suicide. Table IV again contrasts the two groups.

Table IV.—*Suicidal Incidence.*

	Definite.	Indefinite.	Non-suicidal.
Depressives	95%	5%	..
Non-depressives	3%	..	97%

In the depressive group it will be noticed that the large majority are also suicidal, whereas in the control group the opposite holds good. Our concern will obviously be more with the exceptions than the rule. Now, it must be conceded that the assessment of the suicidal risk in a depressive state is not an easy task, nor is it judged by uniform standards, and consequently psychiatrists will at times disagree as to severity of this chance in any given case. The picture is complicated by the fact that this risk of itself varies from time to time in the same case. The question of these patients being, or not being, suicidal must thus be taken for granted as the considered opinion formed when the cases were seen, and based on questions put to the patient as to her state of mind when the homicidal act was attempted, or of the presence of a definite suicidal act, for all intents and purposes, simultaneous with, or occurring shortly after, the homicidal episode. On these lines it may be safely assumed that the tendency to suicide was a very definite risk when it is so marked in the table.

Now for the exceptions. Firstly, the doubtful depressive case. Although in this instance the woman made no direct admission of her wish to do away with herself, the chances are that this intent was present, as she displayed many other depressive symptoms which commonly accompany such behaviour, i.e. self-reproach and condemnation because she was unable to breast-feed her child. The non-depressive control case which is marked as being suicidal is of special interest as it displays some of the factors common to the psychotic group, but for other reasons, to be referred to later, can be ruled out of that class. It may be summarized thus :

Case XIX.—Woman aged 44, married but separated for 4 years. Had 1 illegitimate child and 2 legitimate. She was worried by her financial affairs and a fear that her husband might take his two children from her. She attempted to gas her 3 children and herself, but all recovered except the illegitimate baby. This, however, is the exception rather than the rule.

Method and Site.

These two factors are difficult to display in tabular form, and to make an accurate comparison between the two groups each case should be examined in detail, which would make these notes unduly lengthy. It has therefore been thought advisable to refer simply to the common factors found. The two factors are taken together because they are intimately related in the psychotics.

From our consideration of the victims we have seen that it is the one of whom the patient is most fond that suffers, and as this is so often a child it is not surprising also to find that the crime tends to occur most frequently in the home, although not necessarily so. With the other type being considered here it may also take place in the home, but quite frequently away from the criminal's residence, which is again to be expected when the difference in motivation is realized. In this series all the psychotics committed their assaults at home, but I have known of instances when other sites have been chosen : these are the exceptions rather than the rule. The non-psychotics, however, tend to be more careful in their choice of site, as in Case XXXII already noted.

The method goes with the site, and the psychotic invariably chooses a means close at hand: she drowns her child in the bath, or suffocates or poisons it by gas, but not by purchasing some noxious drug from the chemist a week or so beforehand. If her homely method fails, the depressive continues the act with the next available instrument. In the case of D. N. T— it was seen that when gassing failed in the bedroom she resorted to the pyjama cords and strangulation. It will not be surprising that sometimes this gives rise to a crude brutality out of keeping with the type of victim. This is important, because it shows that there is no indication of the presence of a psychosis to be found from the study of the method alone, other than the fact that depressive homicides show but little previous planning. The case of V. W— shows this. She is a very happily married woman in the thirties, and her crime consisted of a homicidal assault on her two children. She attempted to drown them both in the bath, and when the elder struggled to get out she hit it on the head with a hammer which had, unfortunately, been left lying in the bathroom.

It is, however, in the sequel to the crime that the most striking difference in behaviour becomes apparent in the two groups, and this may be conveniently taken next.

After-Behaviour.

Some slight explanation is needed of this term. It refers to what occurred immediately after the crime, other than a suicidal attempt. An effort has been made to summarize this in the next table.

Table V.—*After-behaviour.*

	Help.	Normal.	Ran away.	Other.	Doubtful.
Depressives	95	..	..	5	..
Non-depressives	7	66	3	10	14

The headings under which the behaviour is classified have the following meanings: "Help" signifies that the patient went for assistance. The type of assistance varied with the circumstances under which the crime was committed. "Normal" indicates that the persons carried on with their daily routine as if nothing unusual had occurred. "Ran away" is self-explanatory. "Other" concerns 3 cases in which some totally unpredictable features followed. In the first of these the woman washed and nursed her drowned illegitimate child; in the second a young woman, after killing her illegitimate baby by drowning and skull injuries, went off to see her boy friend; and in the last a girl of 19 suffocated her illegitimate child, and then went to stay with a girl friend. The heading "doubtful" is used because the classification here was impossible. In these 4 incidents the after-behaviour was unknown in one; in another a woman was so ill after her confinement that she was rushed to hospital for a blood transfusion; in the third a woman murdered her mother of 80 by hitting her on the head with an axe, and then went for a ride on her bicycle; and the last went to her mother-in-law's, after killing her illegitimate child, for no particular reason.

The important point of this table is that the psychotics all went for aid, except one who was found immediately after the act. Often this aid was the police, relatives or friends near at hand, a doctor, or, as on one occasion, the woman ran to her husband at work. Now this behaviour following the act necessitates the leaving of the victim, and in consequence there is no attempt to conceal the crime. On the contrary, this behaviour is just that which brings it to light. When this is compared with the control group we see that the very opposite holds good. Most non-psychotic crimes are committed in seclusion, and there must be a short interval before the perpetrator can resume a normal routine, as so many of them appear to do. The important difference is that they do not call for assistance and so reveal their acts, and when this short interval prior to resuming their ordinary lives is filled in, concealment in some form or other is frequently found. The effort of hiding the act is well revealed in a girl of 18 who gave birth to her second illegitimate child whilst staying at a friend's house. Her previous child was born when she was 14. The labour occurred during the night, and she carried on in a normal way during the next day, but had managed to get rid of her offspring in a well at the back door of the house in which she was a guest. Even the woman who was rushed to hospital for a blood transfusion (mentioned above) after her confinement managed to push the child down the lavatory; or more obviously still the case of a 20-year-old girl who got rid of her 3 weeks old illegitimate child by burying it in a field. Two other cases will be enough to accentuate this: a married woman of 29 strangled her 6-year-old illegitimate child with a belt, and kept the body for $4\frac{1}{2}$ months in a kitbag in a cupboard in her room; and the 27-year-old married woman who cut the throat of her newly-born child, and attempted to burn it under the kitchen copper. The father of this child was the woman's step-father, and she had concealed her pregnancy from everyone, and made no preparation for the child. In Case XIX, which was suicidal, the typical behaviour of going for aid was absent, and the next point under consideration totally inapplicable. This then could not have been a depressive crime.

Previous Symptoms.

This most important point in deciding if a homicidal assault is due to a depressive psychosis or not has been left until last for this reason. It is obviously completely absent in the control group, and it is the type of onset of the psychosis with which we are particularly concerned here. Now most of these cases come to light because of the crime associated with them or, to put it another way, the police discover the patient rather than the relatives. Two possibilities present themselves for consideration, viz. (*a*) that the onset of the illness is the homicidal attack itself; (*b*) that the previous symptoms are so slight that the seriousness of them is overlooked. It may be said at once that the first possibility does not exist. In short, no depressive homicide was without symptoms of her illness before the crime, and so (*b*) has to be considered. This will obviously depend on the persons who observe the symptoms, for the labourer can hardly be expected to judge these with the same skill as the psychiatrist. An example, at some length, of this regret-

table lack of appreciation of symptoms by those who might be expected to pay more attention to them will perhaps not be out of place in showing how easily even gross cases are overlooked. K. A. W—, aged 27 is the wife of a clerk in the Air Ministry. She killed her 4-months-old child by drowning. She was living with her mother at the time of the tragedy. In August, 1940, she gave birth to a female child. She had always wanted a girl "more than anything else in the world," and was very pleased when her wish came true. On her return from hospital the child developed an abscess in the breast, which required a minor operation. During this the patient waited outside, weeping copiously. She developed insomnia—in part due to the air raids—and when an "incident" occurred near her home she complained to her sister-in-law that she could no longer look after the baby. For the next few days she was crying, ate little and seemed dazed. She went to a general hospital and was an in-patient for 2 weeks. Her condition did not greatly change, and she was sent away with the child to a country house for invalid evacuees. After one night here the authorities refused to keep her, as she was "hysterical." She returned to London, but to her mother's house, where she had fits of crying, complained of tight bands around her head, and was morose and silent. She complained that the house and herself were dirty, when in fact the opposite was true. By now the baby had completely recovered from her minor illness, and the patient's symptoms improved with it, but soon she again could not sleep, took no interest in anything, thought people were looking at her, and that there was something wrong with her child. She took the child to a welfare centre on several occasions with ridiculous, almost irrational complaints about its health, e.g. its legs and back were crooked. One morning her parents returned from shopping to find the child newly drowned, and the patient contemplating suicide. Her remark at the time was to the effect that what she had done was for the best, as she could not leave the child to the care of others.

In this history the relatives may be excused their lack of insight, but one might have thought that the welfare centre would have realized something was wrong with her when she made her ridiculous complaints of the child's health, and one is even more amazed that the catastrophe was not averted when she herself had been under hospital care.

It will be obvious from the above that symptoms are often very gross before the act, but sometimes much less conspicuous than in the example given, but this will still be one of the main features in deciding that the patient's behaviour is due to the illness. In the non-psychotic cases there are, of course, none of these preceding signposts pointing to the cause.

It may be convenient at this point to summarize the factors in favour of a depressive crime, and discuss each in turn when additional points need further elucidation, with some extra comments.

Discussion.

The easiest way to deal with this aspect of the subject is to take a hypothetical case showing every possible point in favour of a depressive psychosis,

and then deal with each in turn. Such a case will show the following points :

It will concern a married woman, rather than a man, of about thirty years of age, who kills the person or persons of whom she is most fond, adopting a "homely" method ; who is also suicidal herself, and yet goes for assistance after the crime : and finally who has shown the symptomatology of a depressive psychosis before the incident with which we are primarily concerned.

The civil state and age of the person requires no comment, beyond that already made when these points were tabulated.

The sex of the person has already been referred to, and it has been suggested that such crimes are commoner in women than men.

Nothing further need be said about the victim.

The combined question of the suicidal tendency and after-behaviour may be taken together, particularly as at first sight it seems contradictory for a suicidal person to go for aid after a homicidal attack. Certain facts about the tendency to suicide in the depressive psychoses are well known to psychiatrists. Firstly, it is common—much more common than homicide ; but we have seen that the latter only occurs when the former is also present, and it is consequently not unreasonable to look upon homicide as an extension of the suicidal impulse. It has been suggested that suicide may be considered as a form of aggression against the self. If this view is accepted, then homicide is an extension of aggression to include not only the self but those things which are nearest to the self, and this will explain the characteristics of the victim, who is almost, in fact, a part of the patient's self. The next difficulty is to discover why the complete act of homicide plus suicide is not always indulged in, but sometimes stops short at homicide. Most psychiatrists will have seen unsuccessful suicidal attempts in depressive states, and will often have been impressed by the fact that immediately after such an event the patient has no wish to repeat it. It is not suggested that this is always true, but sometimes the whole depressive illness shows signs of a rapid remission after such an episode. If we consider the homicidal-suicidal complex as a complete whole, then its semi-completion—i.e. homicide only—corresponds with an unsuccessful suicidal attempt in non-homicidal depressions, and after the homicide has been done the urge to complete the act is lost, and so the suicide is not attempted.

The after behaviour of the homicidal depression now resolves itself into three possibilities. I : Suicide—which may or may not occur. II : The interruption of the act, as in the case described under "previous symptoms," where suicide is unlikely to occur. III : The rush for assistance. No enlargement of I and II is necessary. III forms the characteristic behaviour of these cases, and its importance is to be found not only in the positive steps taken by the patient, but also in the negative omissions that must go with it, e.g. the lack of attempts to hide the crime. It will be obvious that I and III may occur in combination.

With regard to the *modus operandi* of the crime, it will be noticed that collusion between two people is not possible in this type of homicide, unless both are depressed. Such examples may be seen in the so-called "suicide pacts."

The after-care of these cases is of great importance, since depressive states tend to recur, although recovery from any one attack is the rule. The psychiatrist is faced with two problems. Firstly, is the homicidal impulse liable to come back? and secondly, should a woman who has killed a child be advised against further pregnancies? The first problem is in some ways the more difficult, and partly helps in answering the second. Just as suicidal tendencies may recur in subsequent bouts of depression, so may homicidal, but with this difference. Once patients have been successfully treated for a depressive illness they gain insight into their condition, and consequently in future attacks there is a tendency for them to seek treatment earlier, and thus the homicidal risk diminishes. Further, not only does the patient gain insight, but also the relatives, and the overlooking of symptoms, as in the case illustrated, is much lessened. This decrease in the homicidal tendency in further attacks of depression helps to solve the second difficulty. If the victim is an only child or the youngest of a small family the patient will be very conscious of this child's absence, and the loss of any article can only satisfactorily be solved by the introduction of a similar one in its place. Therefore, further pregnancies should be permitted, the earlier the better, as by this means the unfortunate woman's mind becomes detracted from her past and directed to her future. Occasions have already been noted in which the crime has been associated with a depressive state occurring at or shortly after the confinement. This, in itself, is no bar to future pregnancies, as it is not certain that a second depressive state will accompany a second pregnancy, and even if it should, the tendency to earlier observation in second attacks decreases the homicidal risk.

Some difficulties in diagnosis present themselves to the psychiatrist when dealing with these cases. Reference has already been made to the sudden improvement that may occur in the mental states immediately following the catastrophe. He will then be faced with an apparently normal subject, and his task is made the more difficult if the only means of eliciting the previous symptoms is the patient's own description. When, however, the behaviour complex follows the outline charted here, he has a strong case in favour of a depressive illness ; and if the patient's previous symptoms are in keeping with this diagnosis it is certain, since the possibility of any one person inventing the previous symptoms corresponding with her behaviour at the time of the crime is negligible.

The second difficulty in diagnosis arises when the patient is first seen some time after the act, and the symptomatology is not of the most severe. If the patient knows that the psychiatrist is seeing her to find an excuse for her behaviour, she is often examined in a state of remorse of the past and hope for the future, which results in a confused obfuscation of thinking superficially, quite unlike a depressive state, and which, at interview, may prevent the patient giving a clear picture of the early symptomatology. In such conditions reliance must again be placed upon the typical behaviour pattern.

Finally, the psychiatrist is confused by the differentiation between infanticide and murder. There is no medical reason why 12 months should have been chosen as the dividing line, and yet a woman who kills her child under

that age has a greater chance of leniency from the courts than if the child is older, and a much greater chance of leniency than a man who shoots his wife, even when the cause in all these cases is a depressive psychosis.

Summary.

1. The behaviour of homicidal depressives has been examined.
2. A typical behaviour pattern has been suggested.
3. The various factors associated with this pattern have been discussed.
4. A comparison of each factor with non-depressive homicides has been made.

ELECTRONARCOSIS, WITH SPECIAL REFERENCE TO THE TREATMENT OF PARANOID SCHIZOPHRENIA.

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Electronarcosis is a state of coma, or anaesthesia, induced and maintained by the continuous passage of electricity through the brain. Although described in animals and man many years previously, it was not introduced into psychiatry until 1944, when a group of Californian workers (Frostig *et al.*) experimented with its use as an alternative to insulin coma treatment in schizophrenia.

Technique and manifestations of electronarcosis.—A machine to produce electronarcosis should deliver a current which remains steady in spite of changes in the patient's electrical resistance. In the writer's original series the domestic alternating current was used and the electrodes placed bitemporally. Details of this machine have been published previously (Medlicott, 1947). The narcosis is started with a current of 160 to 250 milliamperes, which is reduced to 60 milliamperes after 30 seconds. During the passage of the high current a tonic spasm at first flexor and later extensor is maintained, and is followed by a few clonic movements on dropping the current. The clonic movements are followed by muscular relaxation, and respiration is re-established at 60 to 70 seconds from the commencement of treatment. With the re-establishment of respiration the current is gradually increased at the rate of five milliamperes every 15 seconds. As the current is increased to the limit of the patient's tolerance respiratory stridor is produced. The commonest difficulty met with in electronarcosis is that of maintaining adequate narcosis at a current level which does not produce severe stridor. The original workers caution against increasing over a limit of 125 milliamperes and making any increases after five minutes of treatment because of the danger of inducing convulsions. However, in a number of the writer's cases convulsions were purposely precipitated late in treatment and were very well tolerated. Although treatments as long as 25 minutes were sometimes given, the usual procedure was to switch off the current after seven and a half minutes of treatment. The patient was started on three treatments a week, and the interval between treatments gradually increased as improvement occurred. Over 30 treatments are quite often necessary. The final results of treatment should not be assessed for at least a month after its termination, as initial improvement often continues to full recovery in this post-treatment period. This time lag between termination of treatment and the achievement of full recovery reminds one of the course of events in some cases after leucotomy.

Noteworthy accompaniments of electronarcosis are the raised blood pressure during and for a few minutes after treatment, and the relative hyperglycaemia

and lymphocytosis during and for a variable time after treatment. These have been reported in detail elsewhere (Medlicott, 1947), and appear to result from prolonged stimulation of the sympathetic nervous system.

Tietz *et al.* (1946) found no physical complications in their series of patients, but in 30 per cent. of the writer's patients the resting blood-pressure rose to above normal limits during the course of treatment, and in some cases persisted at hypertensive levels for several months after treatment was discontinued.

Emotional dulling and some memory defect were common towards the end of a long series of treatments and a few patients became confused. Such conditions cleared up after treatment had been discontinued. Considering the total number of milliampere-seconds of current (tens of thousands) that pass through the brain during the average treatment the amount of memory change is surprisingly little, and in some cases it could not be detected with the usual tests. It is the writer's impression that the intensity of the current rather than the duration of the current flow is the more important factor in the production of organic brain damage. In electroconvulsive treatment where currents of higher intensity flow for only a fraction of a second memory loss is almost as common as in electronarcosis. In a series of electroconvulsive cases treated recently, using unidirectional brief stimuli currents of square wave form, it was possible to produce convulsions with $\frac{1}{30}$ to $\frac{1}{10}$ of the quantity of electrical energy used in standard electroconvulsive technique and only a slight increase, 0·5 to 1 second, in the duration of the current flow. Convulsive therapy using such low currents was associated with appreciable diminution of memory defects and with less mental dulling and confusion. Experiments are in progress using an electronarcosis machine utilizing this modified type of current.

Results.—Tietz *et al.* (1945 and 1946) in reporting their 47 schizophrenic cases used the following ratings: An "A" rating indicates recovery with insight, "B" indicates social recovery with retention of some schizophrenic features, "C" indicates some improvement, and "D" denotes failure.

Their results were:

A	. . . .	40·4 per cent.
B	. . . .	36·2 ,,
C	. . . .	10·6 ,,
D	. . . .	12·8 ,,

They concluded that their results with electronarcosis were similar to those obtained with insulin coma treatment, and definitely superior to those obtainable with electroconvulsive therapy.

In the writer's original paper (Medlicott, 1947) a slightly different classification was used, but for the purpose of comparison the results have been reassessed under the same ratings. There were 50 schizophrenics treated, and the results were:

A	. . . .	28 per cent.
B	. . . .	14 ,,
C	. . . .	16 ,,
D	. . . .	42 ,,

On the surface these results compare unfavourably with those of Tietz *et al.* (1945, 1946), and were below those the writer had previously obtained in 140 schizophrenics with electroconvulsive therapy, which were :

A	. . . .	37·2 per cent.
B	. . . .	15·0 ,,
C	. . . .	19·3 ,,
D	. . . .	28·5 ,,

However, the electronarcosis group contained a higher proportion of prognostically unfavourable cases ; only 17 cases had a duration of illness under six months. While in general the writer's experience did not suggest that electronarcosis was superior to electroconvulsive therapy in all classes of schizophrenia, there was one class, paranoid schizophrenia, in which electronarcosis produced surprisingly good results. For this reason personal experience in treated and untreated cases of paranoid schizophrenia has been reviewed.

In this review paranoid schizophrenia has been accepted as a schizophrenic illness characterized by prominent delusions of a persecutory or mixed persecutory and grandiose type, which are less bizarre and changeable than hebephrenic delusions, and are accompanied by less profound deterioration in personality and habits. Older at the commencement of his illness the paranoid schizophrenic cannot retreat from his responsibilities so unashamedly as the simple or hebephrenic schizophrenic, and he projects on to the outside world the responsibility for his inability to adjust to real life. His delusions and hallucinations form a screen behind which he hides. The clinical picture is relatively constant when once developed, and it is important to exclude many borderline schizophrenic states with good prognoses which show a more vivid and rapidly changing clinical picture. In these borderline states delusions may be prominent, but there is usually gross emotional turmoil and dramatization of conflict. No patient in this series was diagnosed paranoid schizophrenic until he showed a relatively stable clinical picture. The outcome in the following groups of paranoid schizophrenic patients has been assessed, using the same ratings as previously. "C" in non-treatment cases represents patients who have only shown slight to moderate improvement in hospital, and "D" patients who showed no improvement or were worse.

I. Outcome in consecutive female paranoid schizophrenic admissions, 1939–1944 (inclusive)—

(*a*) Patients under 40 years of age at onset of illness—46 cases :

A	. . . .	10·9 per cent.
B	. . . .	—
C	. . . .	2·2 ,,
D	. . . .	86·9 ,,

(*b*) Patients over 40 years of age at onset of illness—60 cases :

A	. . . .	6·7 per cent.
B	. . . .	8·3 ,,
C	. . . .	—
D	. . . .	85·0 ,,

With the exception of nine cases in group (*a*) and one case in group (*b*) who received convulsive therapy, all these patients received only routine mental hospital treatment. Even allowing for the fact that many patients were already chronic by the time they were admitted, the percentage of "D" ratings adequately indicates the unfavourable prognosis of paranoid schizophrenia.

II. Paranoid schizophrenia treated with insulin subcoma therapy—10 cases:

A	10 per cent.
B	—
C	10 ,,
D	80 ,,

Although it is difficult to draw conclusions from so small a group, it would not appear that subcoma insulin therapy has any effect on the outcome of paranoid schizophrenia.

III. Paranoid schizophrenia treated with convulsive therapy—18 cases:

A	5·6 per cent.
B	11·1 ,,
C	16·7 ,,
D	66·7 ,,

These results are somewhat more favourable, and it is the writer's impression that convulsive therapy favourably influences the outcome in a small percentage of paranoid schizophrenics.

IV. Paranoid schizophrenia treated with electronarcosis—16 cases:

A	37·5 per cent.
B	25·0 ,,
C	12·5 ,,
D	25·0 ,,

In five further cases treated since this paper was originally prepared there have been two "A" results and three "B" results.

In a prognostically unfavourable group of cases these results are very good. Unfortunately the group is too small for one to be dogmatic in one's conclusions, but the clinical impression was that paranoid schizophrenia, if treated during the first year of illness, responds more favourably to electronarcosis than any other form of treatment. In future it is intended to use electronarcosis in all early cases of paranoid schizophrenia.

So far only schizophrenics have been treated with electronarcosis, but its possibilities will be explored in other disorders in which simple electroconvulsive therapy is not successful. Recent work on the treatment of chronic intractable psychoneurotic states with intensive electroconvulsive therapy suggest it may be applicable in such states, and work is being started on these lines.

Some theoretical considerations.—Electronarcosis presents similarities to both electroconvulsive and insulin coma treatments. The narcosis or coma is preceded by a modified but definite convulsion. If the initial high current is shut off after a few seconds the convulsion is in no way different from that seen with electroshock. In fact Olsen and Dale (1946) recommend that in electroconvulsive treatment split-second timing should be eliminated, and the convulsion produced by a dosage of 200 milliamperes flowing for about ten seconds. In a small series of patients the therapeutic effect of the modified convulsion that precedes the narcosis proper was tried. These were patients suffering from recurrent attacks of excitement whose recurrences had in the past been readily controlled by standard electroconvulsive treatment. Thirty seconds of high current and 30 seconds of reduced current were given at each treatment. These patients responded to these modified convulsions as rapidly as they had done to the standard electroconvulsion. Although it is probable that the modified convulsion at the commencement of electronarcosis has the same therapeutic effect as the standard electroconvulsion, there would seem little doubt that the succeeding electrically maintained coma is essential for the therapeutic efficacy of electronarcosis in more resistant psychotic states such as paranoid schizophrenia. It was, of course, on the belief of the efficacy of an artificially induced coma in the treatment of schizophrenia that Frostig *et al.* (1944) originally used electronarcosis. The present study supports their belief.

The rationale of electronarcosis is as obscure as any other form of so-called "shock" therapy. We know that there is stimulation of the autonomic nervous system which is more prolonged than with electroconvulsive treatment, and Ellis and Wiersma (1945) have demonstrated in animals an increase in circulating thyrotrophic hormone together with hypertrophy of the thyroid, adrenals and gonads presumably due to stimulation of pituitary activity. Either of these stimulating effects may have a beneficial influence in schizophrenia, but in spite of evidence of disturbed autonomic and endocrine activity in this disorder there is no substantial evidence that such changes are the cause rather than manifestations of schizophrenia. Delmas-Marsalet (1942) expresses a similar theory of action for all forms of "shock" therapy, which he has called the "dissolution—reconstruction hypothesis." According to this thesis the coma represents dissolution and the waking from coma reconstruction of psychic activity. Cossa (1947) expresses it thus: "Figuratively, one may say that beginning with a given psychic configuration, dissolution reduces it to scattered fragments. Reconstruction must make use of these same fragments, but according to a new plan. This reconstruction phase does not simply reproduce in reverse the dissolution phase; the various functions as restored present spatial and temporal differences." On this hypothesis it is understandable that electronarcosis producing a disorganization of greater duration and probably more profound intensity than electroconvulsive treatment would be more effective in mental disorders with relatively well developed and resistant psychotic organization such as paranoid schizophrenia. Functional disorganization or dissolution does not require irreversible brain damage, and there is little evidence to support the view that the various forms of "shock"

treatment produce clinical improvement in direct proportion to the severity of organic brain damage.

Summary.

The technique, manifestations and complications of electronarcosis have been briefly described.

The results obtained with electronarcosis in a small group of paranoid schizophrenics when compared with untreated cases and those treated by subcoma insulin and electroconvulsive therapy were greatly superior.

Electronarcosis presents similarities to both electroconvulsive therapy and insulin coma therapy, and some ideas concerning its rationale as a psychiatric treatment are discussed.

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Literature Cited.

Cossa, P. (1947), "Letter from France," *Am. J. Psychiat.*, **103**, 433–439, January.

Delmas-Marsalet (1942), *Electroshock Therapy and the Dissolution-Reconstruction Theory.* Baillière. Cited by Cossa (1947).

Ellis, C. H., and Wiersma, C. A. G. (1945), "Influence of Electronarcosis on Secretory Activity of the Pituitary Gland," *Proc. Soc. Exper. Biol. and Med.*, **58**, 160–162, February.

Frostig, J. P., Van Harreveld, A., Resnick, S., Tyler, O. B., and Wiersma, C. A. G. (1944), "Electronarcosis in Animals and in Man," *Arch. Neurol. and Psychiat.*, **51**, 232–242, March.

Medlicott, R. W. (1947), "Electronarcosis Treatment of Schizophrenia," *N.Z. Med. J.*, **46**, 280–297, August.

Olsen, C. W., and Dale, L. C. (1946), "Electroshock Therapy with 200 Milliamperes for Ten Seconds," *Arch. Phys. Med.*, **27**, 488–490, August.

Tietz, E. B., Thompson, G. N., Van Harreveld, A., and Wiersma, C. A. G. (1945), "Electronarcosis—A Therapy in Schizophrenia," *Am. J. Psychiat.*, **101**, 821–823, May.

Idem (1946), "Electronarcosis, Its Application and Therapeutic Effects in Schizophrenia," *J. Nerv. and Ment. Dis.*, **103**, 144–165, February.

PSYCHIATRIC TREATMENT OUTSIDE MENTAL HOSPITALS.*

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In this discussion of psychiatry outside mental hospitals, it is proposed to deal mainly with the field of psychiatry inside general hospitals. The idea of in-patient psychiatric beds in the general hospitals is certainly not new, and was tried out between the last two wars. One of the factors responsible for failure was a lack of effective therapeutics. Thus the comparatively small number of beds available were occupied for periods too long for ordinary general hospital practice, and facilities to ease long-term admission in occupational and social directions were usually lacking. The situation has not substantially changed from that described by Weir Mitchell, who caustically remarked that psychiatrists pleaded for opportunity to treat the early case, but when the plea was granted there was little that could be done. In the last few years advances in both psychological and physical methods have reached a point where certain categories at least of mental illness can be considerably helped by admission to a general hospital psychiatric unit, and be discharged in a period comparable to that usual in general medical wards. A report made in 1943 by the author at Sutton Emergency Hospital, and later, social studies by Brown and Carling, 1945, at the Radcliff Infirmary, Oxford, showed that the six weeks' average stay of the psychiatric in-patients was less than the average for medical patients of a general ward. It was not just a matter of performing a little diagnostic investigation and then transferring the patient elsewhere. In fact less than 8 per cent. of these psychiatric patients were sent to other hospitals. The full figures for a year's admissions are available in the 1943 report.

The in-patient selection field is very wide, and inevitably merges with the mental hospital on one side and the general hospital ward on the other. It has been said, not unreasonably, that mental hospitals are the place for mental illness, and that the innovation discussed trespasses on their clinical inheritance. Writing as one who works in both fields, I do not think this is so great a difficulty as some might believe. Inevitably there must be a little overlapping, but so far as my experience at Sutton was concerned, the majority of those admitted to the psychiatric ward in the general hospital block were not often seen in the mental hospital unless their clinical condition had subsequently altered. One has to remember that except for those who could afford a nursing home, and excepting the very occasional unit provided by a few more far-

* A paper read at a February meeting of the Royal Society of Medicine (Section of Psychiatry).

sighted local authorities and their superintendents, there has so far been no specialized hospital service exclusively available to neuroses and milder forms of psychoses. The provision of voluntary status at mental hospitals covers these types in theory, but only partly in fact. The proportion of voluntary patients varies widely, and naturally it is highest where there is adequate treatment, in hospital units that allow of their being undisturbed by acute cases or depressed by mixing with chronic ones. Until such conditions are universal, one still has to reckon with the public prejudice that tends to make a patient choose the general hospital even if architecturally it is lacking in the amenities of the modern mental hospital admission villa.

The *diagnosis and selection* of patients for a general hospital psychiatric ward cannot be done solely within the usual clinical classification, e.g. some depressions are suitable, others far from it. Looking back over the diagnosis of several hundreds of my patients, it was evident that almost every notable psychotic and neurotic type was represented, from subacute schizophrenia to drug addiction. The factors that really enabled certain obviously psychiatric patients to be cared for in a general ward were one or more of the following: (*a*) A well integrated personality prior to breakdown could retain better social control of symptoms than those less well adjusted; (*b*) the illness was of a type in which prompt treatment could control any features likely to menace the patient or others; (*c*) all patients possessed sufficient insight to know they needed care; and (*d*) the course of the illness in those who were psychotic was of moderate severity. It is such general considerations as those that enable some schizophrenics, certain manic-depressives and so forth to be treated in the open general hospital ward with the neuroses without any special precautions, and even on the top floor of the block.

Some psychiatric types found specially suitable are neuroses in which the struggle to adjust and the tension involved has caused manifest physical deterioration. The patient goes downhill in a vicious spiral of combined psychological and physical traumas. In other cases stress in the home or other environment may be so severe that without removal to hospital recovery would be unlikely or long delayed.

Turning from patients who are solely psychiatric candidates for treatment, there is the large group of psychosomatic cases and others where superficially at least the organic aspect seems predominant. Doubtful cases of cerebral tumour, encephalitis or narcolepsy may be referred for psychiatric attention. The proper investigation of various psychosomatic pains can often be assisted by the backing of general hospital laboratory and radiological facilities. None the less, a vast amount of laboratory and such like investigation could eventually be cut out if the student was taught the characteristic features of psychogenic pain as carefully as the physical pains of pleurisy or renal colic. Diseases such as thyrotoxicosis, peptic ulcer, migraine, asthma, colitis, rheumatism, cerebral trauma, are amongst those subject to greater or lesser degree of emotional aetiology. In some of the above, investigation will make it clear that the whole syndrome is fundamentally neurotic without demonstrable organic lesion, as in the gastric, cardiac, dermatological neuroses; while in others it will be found that emotional complications are aggravating undoubted organic

illness. In the latter we reach a borderline group that so far as selection is concerned are often better treated in an ordinary medical ward.

It is the presence of many better adjusted personalities in this form of work that swells the recovery rate of the physically treated patients compared with results for the average certified mental hospital patient, though on paper they might all look much the same.

Many of the types mentioned are not usually seen in mental hospitals, though they have masqueraded frequently in medical and surgical wards under indefinite or tentative diagnoses. One effect of general hospital psychiatry is merely to grant a frank recognition of the status of such patients. It is clear that the responsibility for selection of patients for admission should be on a senior psychiatrist. The soundness of his out-patient recommendation for the various forms of in-patient status will mainly determine such later complications as premature departure of the mental hospital voluntary patient, or the upsetting of a general hospital unit by noisiness, interference, or suicide, and so on, with possibly subsequent certification in the observation ward.

Where case selection is on these lines, a specimen unit, as it were, of 30 beds will be found to be composed as follows: Rather more than half the patients are neuroses and rather less than half psychotic in type. About half require psychological treatment and investigation, and half some form of physical therapy. At any one time facilities are needed for approximately eight patients on E.C.T., four on insulin comas, another four on modified insulin, two or three on prolonged sleep courses, and very occasionally a leucotomy. Other brief forms of psychotherapy are often needed to complete the treatment of those who have had the physical methods. Such a ward obviously is quite unsuited for patients requiring prolonged psychotherapy or psychoanalysis. If this is indicated, discharge to the out-patients' clinic is arranged. Though only a small proportion of these hospital cases are suitable for analytical technique, there is much that can be done for them psychologically.

The in-patient situation often produces excellent diagnostic information about the patient's personality and its trends, especially after the initial strangeness has worn off, and the patient is more or less being just himself. Assisted by reports from nursing staff, one soon has a better picture in a relatively short time of what kind of a person the patient really is, and many hitherto doubtful features and diagnoses can be settled. When general factors such as these are linked with special methods such as narco-analysis, abreactive techniques, and physical forms of treatment, then the time required for psychotherapy is shortened, and if proper medical staffing allows, it can also be concentrated. Because a majority of patients labour under faulty personal attitudes to occupational, marital, sexual or domestic matters, or because they are subjected to over severe stresses in these fields, it is possible to bring much relief by essentially practical readjustments in these aspects of life, by group therapy, the social club, the resettlement officer of the Ministry of Labour, in addition to the all-important personal interview.

All this is no substitute for such as should properly be subjected to free associative technique. Yet with and without physical treatment, the policy just mentioned led to the recovery of approximately 40 per cent. of civilian

patients, and the improvement of 40 per cent. more in a psychiatric ward on the general side of Sutton Emergency Hospital, after a follow-up of two to twelve months. No group or social club facilities were available at that time.

There are a few practical points in *administration* and *treatment* that are of particular importance for these patients. Even in this type of work the protection of a patient may become an over-riding consideration. The responsibility is the greater since there is no coverage from the mass of regulation and procedure that helps to ensure the safety of the mental hospital case. If general hospitals recognize their own clinical limitations, no such procedure is necessary.

Normally the patient's liability to suicide is settled in the out-patient department or at in-patient consultation in a general ward. By way of illustrating the situation as seen in this type of practice, the records of some 65 general hospital cases who were referred to me from medical wards for psychiatric opinion after attempted suicide in the past fourteen months were re-examined. Of all cases, two-thirds were female, and ages spanned from 16 to 80 years. The majority were between 20 and 40 years of age. In over half, abnormal and unstable previous personalities could be established. Had subsequent interviews been possible, this number would doubtless have been higher. Over half the number used drugs, especially luminal or aspirin as the method, and a fifth employed coal gas. Definite violence was only used by 6 male patients. The most common diagnosis was that of depression, mainly reactive in 21 patients, mainly endogenous in 7; next in frequency were neurotic states, of whom 14 were hysterical and 4 anxious. The remainder were composed of 10 psychopathic personalities, 6 epileptics, 2 schizophrenics, and 1 paranoid psychosis. Male psychotic and psychopathic personalities made the more violent and drastic attempts. All social grades were represented. In nearly a quarter of these cases previous attempts had been made, more especially by hysterias and hysterical psychopaths. Apart from personality defects the main precipitating causes were marital, economic, occupational, and due to organic disease, in that order of incidence.

It is in this type of work that one may sometimes meet the better integrated personalities, who can so minimize symptoms and retain an outward control that attempted or successful suicide is perhaps the first and last visible evidence of breakdown.

More than half the patients were eventually discharged home with or without recommendation for out-patient treatment and various social adjustments. Ten required observation ward care, but others went voluntarily to special hospitals, neuroses centres, nursing homes, etc.

Despite previous consultation, in these days of few beds and long waiting lists, a patient may have altered for better or worse between the time of out-patient interview and admission to hospital. One may have to decide whether to retain or to send to the observation ward a case of good prognosis, though relatively acute, possibly confused, noisy or potentially suicidal. Patients should not be retained in the general hospital unless there is reasonable prospect of controlling symptoms within an hour or so of admission, and unless the diagnosis is sufficiently clear to warrant sacrificing much of the customary

case-taking and investigation. Delay may open the door to suicide, or to manifestations of mental illness detrimental to the progress of other patients. To shut the noisy patient in a side room is no answer, since the idea soon spreads that the ward is becoming a mad-house. If one has to deal with the psychiatric emergency in a general hospital, it is necessary to do as the general hospital does and operate or act on minimum data. For example, prolonged sleep—using quick-acting barbiturates such as sodium amytal, or by electro-convulsive therapy are particularly useful. Narcosis is suited for very acute hysterical and anxious states, and where E.C.T. is not possible, for some agitated depressive and mildly manic conditions. The concentrated use of E.C.T., e.g. one to two fits a day for two days followed by others more spaced out, should settle any affective disorder that is remotely possible for a general hospital. A preliminary course of either of the above can be employed to improve schizophrenic cases temporarily, especially those liable to impulsiveness, while insulin dosage is being built up to coma levels.

It is most important that a good atmosphere or state of morale be maintained, and it is worth remembering that the fundamental attitude of a general hospital psychiatric ward is the reverse of a ward full of certified psychotics. In the latter, acute disturbances may pass almost unnoticed, and even suicidal attempts elicit little reaction. In the former, the neurotic group over-react to and are over-aware of the most modest environmental stimulus. Anyone who has experienced war emergencies in both mental hospitals and neuroses centres will know how great is the difference. Exhibitions of hysterical, agitated, anxious or schizophrenic symptoms should not be allowed to run unchecked. They are apt to spread, with disastrous effect on the progress of other neurotic patients. Occasionally a few will take the view that having seen what nervous illness can really mean, their own complaint must be of little account. They endeavour mentally to pull themselves together and try again. Such talk may be genuine, or it may be a polite rationalization to facilitate their own discharge.

It is suggested that short periods of admission with a steady turnover of patients is the most useful policy. From three to seven weeks is enough for the majority of patients, but this can only be done successfully if those in charge are prepared to use a full range of treatment consistent with the varying needs of their patients. There is no place in this type of work for whole treatment programmes run solely on a particular ideology, psychological or physical. Collections of chronic patients are to be avoided, unless admitted for some limited investigation or to tide them over a difficult phase. One should avoid admitting many cases of hysteria at any one period.

Concerning one's relations with the law, the situation is similar to but not identical with that of any general practitioner treating the psychiatric case. The relieving officer and the observation ward are called on if required. Technically cases that are certifiable may not be retained without the sanction of the Board of Control. Psychiatric patients very greatly appreciated the complete lack of any legal formality or signing of papers on admission or discharge, and it is hoped that this freedom will continue. Administratively I never felt the need of an alteration. Provided one is careful to keep case

selection within the limitations of its own sphere, legal aid should not be necessary and only rarely the assistance of the relieving officer. It follows that administratively as well as therapeutically so much depends on selection and therefore diagnosis in this regime.

In addition the general hospital psychiatrist is usually called to consult in general wards of his own and maybe other hospitals for diagnosis and disposal. In such work the whole field of psychiatry can be covered, and in differential diagnosis no mean part of medicine as well. The range of experience required is considerable. The general psychiatrist, like any general surgeon, requires to keep sufficiently in touch with general medicine, and not only with neurology, to maintain efficiency in his own work.

In conclusion, it is suggested that the use of general hospital beds for psychiatric purposes is a further step to fulfilling the needs of one section of a socially heterogeneous group of illnesses. Probably this type of psychiatry will do much to hasten public acceptance of neuroses and psychoses as forms of illness, and thus ease the stigma which hampers many aspects of the subject. In the long run any relief from public prejudice will help the mental hospitals to cater for a wider in-patient field than the majority do now, especially when these hospitals have been more radically adapted for different grades of mental illness. In the meantime there are many undoubted sufferers from psychiatric illness such as the psychosomatic types, not requiring the more elaborate setting of a mental hospital in which to recover, who will not consent to in-patient treatment unless on equivalent social footing with the medical case. They may be prepared to face the realities of their maladjustments in the confidential atmosphere of the consulting room and in the sympathetic milieu of group therapy, but they are unwilling to advertise the nature of their disorder to a public of limited understanding by being admitted to the mental hospital, even when full treatment is available.

References.

Sands, D. E. (1943), *Brit. Med. J.*, **1**, 628.
Brown, M., and Carling, F. C. (1945), *ibid.*, **1**, 478.

OBSERVATIONS ON THE ELECTRICALLY-PRODUCED EPILEPTIC CONVULSION. PART II: PUPILLARY PHENOMENA IN NORMAL AND PATHOLOGICAL PUPILS.

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There are three particular pupillary movements in the course of the electrically-produced epileptic fit: dilatation during the convulsion, constriction in the post-convulsive stage, and spasmodic dilatation towards the final stages of the post-convulsive stage. The pupillary dilatation in the convulsive phase is identical with that found in the spontaneous epileptic fit, where it is generally considered as an expression of sympathetic activity, either the consequence of a general (Bumke, 1914) or of a focal cortical excitation (Foerster, 1936; Penfield and Erickson, 1941), or, an opinion held more recently, due to a hypothalamic mechanism (Delay, 1946).

Of special interest is the spasmodic pupillary dilatation. It is invariably associated with general motor reactions of the skeletal muscles. Whilst the patient is unconscious and motionless sudden muscular contractions occur, either of single muscles or of muscle groups, or of a general nature. Simultaneous with these pseudo-spontaneous movements a marked dilatation of the pupils occurs, and the light reflex, if previously present, disappears; when the movements cease the pupils contract to their previous size. There is either a succession of such waves, or a continuous muscular restlessness which passes into a semi-conscious state. The general physiological setting in which these reactions occur is that of a deep sopor. Corneal and light reflexes may or may not be present, and the skeletal muscles may either be flaccid or in a state of rigidity. Deep reflexes are present, but there is no response to painful stimuli. No pupillary reaction is seen when the movements are produced passively or by electrical stimulation of muscles or muscle groups.

Changes of pupillary size associated with muscular activity have been described by Redlich (1908). This author described dilatation of the pupils which he attributed to general cortical excitation following heavy muscular exercise, especially in hysterics and epileptics. The conditions in our observations are obviously different; the physiological setting and the character of the movements of the skeletal muscles indicate a subcortical rather than a cortical mechanism. The main obvious participants in this synergic pattern are the voluntary skeletal muscles and the autonomic muscles.

To decide whether the dilatation of the pupils is due to sympathetic excitation or to loss of parasympathetic tone, atropin and cocain were instilled into one eye of a number of patients before E.C.T. During the pseudo-spontaneous movements no further pupillary dilatation was observed in the eye treated with

atropin, whilst the pupil in which cocain was instilled showed a definite enlargement. This indicates that the pupillary dilatation is due to loss of parasympathetic activity. The paroxysmal synergic action of voluntary muscles and of pupillary enlargement contrasts to the resting tendency to pupillary contraction. This contraction was frequently almost pin-point and was present after cocain instillation; it is apparently due to sphincter activity. In both of these conditions therefore a well-defined motor pattern exists, during which voluntary muscles and parasympathetic eye muscles are in an inverse functional relationship. The pupillary dilatation in the convulsive phase fits into this pattern; as in the post-convulsive movements there was no pupillary enlargement after atropin instillation, whilst the pupil treated with cocain dilated.

This pattern of autonomic and voluntary muscle activity is not specific for the epileptic fit. In insulin coma when the skeletal muscles are inactive the pupils are small. Waves of active movements similar to those seen in the epileptic phase appear, with simultaneous enlargement of the pupils. One patient during coma slowly lifted his right arm at irregular intervals, and this was consistently accompanied by marked dilatation of the pupils, which returned to their small size immediately the arm movement had ceased. Inactivity of skeletal muscles and tendency to pupillary contraction can be found in conditions of unconsciousness whatever their aetiology. There is some indication that this synergy is physiologically preformed. There is contraction of the pupils during sleep, a satisfactory physiological explanation of which has not been found. The relations to the motor pattern which we observed are obvious. It has been noticed that a number of concomitants of sleep are typical of parasympathetic activity. This would give the relation we found between voluntary and autonomic muscles a more general character.

With regard to pathological material, five cases of Adie's pupils with a depressive picture and four cases of Argyll Robertson pupils in patients with general paresis and restlessness were treated by E.C.T. The following observations were made:

Group I: Cases of Adie.

Case 1.—The right pupil was slightly larger than the left. Light and convergence reaction normal in the left eye. On the right there was a slow contraction to light, but only in the dark; convergence showed prompt contraction with delayed dilatation; in the dark dilatation of the pupil was much delayed. On the left reactions normal. Good dilatation after atropin. Knee-jerks on both sides diminished; less on the right. Ankle reflexes not obtainable. W.R. negative.

Case 2.—Left pupil much larger than right. On the left poor reaction to light; tonic convergence reaction. In the dark left pupil enlarged after long delay. Pupils enlarged well after atropin. Ankle reflexes absent. Serological reactions negative.

Case 3.—Left pupil slightly larger than right. Both pupils react sluggishly to light. Tonic convergence reaction on both sides. In the dark delayed enlargement. Both pupils enlarged well after atropin. Serological reactions negative.

Case 4.—Left pupil larger than right. Very poor reaction to light; more so on the left. In the dark difference in the size more marked. Tonic convergence reaction on both sides. After atropin both pupils dilated well. W.R. negative.

Case 5.—Right pupil larger than left. Right pupil reacted upon light only in the dark; enlargement delayed in the dark; convergence reaction tonic. On the

left normal reactions. Good enlargement on both sides after atropin. Knee and ankle reflexes absent. Serological reactions negative.

All of these cases except Case 5 were female.

Group II : Argyll Robertson Pupils.

Case 1.—Very small irregular pupils with no light reaction. Very active convergence reaction.

Case 2.—Small irregular pupils with little light reaction and good convergence reaction.

Case 3.—Right pupil dilated. Left middle size. On the right no light reaction and poor convergence reaction. Both reactions better on the left.

Case 4.—Small irregular pupils with poor light and good convergence reaction.

In the first group, consisting of cases of complete and incomplete Adie syndrome, no alteration of the pupillary size in the affected eye occurred in any of the phases of the epileptiform fit. In the Argyll Robertson pupil, on the other hand, the pupils enlarged during the convulsive stage and during the post-convulsive movements of the skeletal muscles ; they returned to their previous size or became more contracted in the quiet post-epileptic phase. The enlargement was least in the case of very small pupils with total absence of light reaction.

We found that the dilatation and contraction of the pupils in normal eyes in the course of the epileptiform fit was part of a synergy of subcortical origin. In contrast to the normal eye, the tonic pupil remains fixed. Under normal conditions the autonomic eye muscles of the tonic pupil react, though slowly, to peripheral stimuli. There is no interruption of the peripheral reflex arc. It can therefore be concluded from the absence of normal pupillary movements during the fit that central impulses of the order described fail to be transmitted to the efferent system. It has been a matter of speculation whether the disturbance in the tonic pupil is of peripheral origin (Schleie, 1940 ; Lowenstein and Friedman, 1942), or of central, specially hypothalamic origin (Foster Kennedy and co-workers, 1938; Lowenstein and Friedman, 1942). Our observations indicate that a sub-cortical mechanism is involved.

Argyll Robertson pupils enlarge in the phases of muscular activity and contract in the quiet phase ; the excursion of the pupillary movements is less than in normal eyes and the enlargement is about the same as that produced by atropin instillation into these eyes. As has been repeatedy pointed out (Bumke, 1914; Behr, 1924), contracture of the sphincter muscle may set a limit to dilatation. It is the general opinion that the functional lesion in Argyll Robertson is in the neighbourhood of the Westphal-Edinger nucleus, damaging the afferent fibre system (Behr, 1924; Bumke, 1914; Magoun and co-workers, 1935, 1936; Merritt and Moore 1933 *et al.*) Our observations do not contradict this assumption, but they do not, however, support the view that the Westphal-Edinger nucleus might be isolated altogether (Spiegel and co-workers, 1936, 1944).

Summary.

In the epileptiform fit produced by electric shock the enlargement of the pupils during the convulsion is followed by contraction in the post-epileptic phase. In this phase spasms of pseudo-voluntary movements in the skeletal

muscles occur with simultaneous dilatation of the pupils. This is a subcortical motor pattern, in which parasympathetic eye muscle and skeletal muscles are in inverse functional relationship. There is some indication that this motor pattern is physiologically preformed.

In tonic pupils no pupillary change could be seen in any of the phases of the epileptic fits. This suggests that subcortical impulses which in the fit are normally associated with the activity of voluntary muscles were not transmitted to the Westphal-Edinger nucleus. In cases of Argyll Robertson such transmission took place, since pupillary dilatation and constriction could be observed during the fit.

Literature.

(1) Behr, C. (1924), *Die Lehre von den Pupillenstörungen.* Berlin.
(2) Bumke, O. (1914), *Die Pupillenstörungen bei Geistes u. Nervenkrankheiten.* Iena.
(3) Delay, J. (1946), *L'Electro-choc et la Psycho-Physiologie.* Paris: Masson.
(4) Foerster, O. (1936), *Brain*, **59**, 135.
(5) Kennedy, F., Wortis, H., Reichard, T. D., and Fair, B. B. (1938), *Arch. Ophth.*, **19**, 68
(6) Lowenstein, O., and Friedman, E. D. (1942), *ibid.*, **28**, 1042.
(7) Magoun, H. W., and Ranson, S. W. (1935), *ibid.*, **13**, 791.
(8) *Idem*, Atlas, D., Hare, W. K., and Ranson, S. W. (1936), *Brain*, **59**, 234.
(9) Merritt, H. H., and Moore, M. (1933), *Arch. Neur. and Psych.*, **30**, 357.
(10) Penfield, W., and Erickson, Th. C. (1941), *Epilepsy and Cerebral Localization.*
(11) Redlich, E. (1908), *Ztschr. f. Augenheilk.*, **19**, 171.
(12) Scala, N. P. (1940), *Arch. Ophth.*, **23**, 371.
(13) *Idem*, and Spiegel, E. A. (1936), *ibid.*, **15**, 195.
(14) Spiegel, E. A., and Sommer, I. (1944), *Neurology of the Eye, Ear, Nose and Throat.*
(15) Schleie, H. G. (1940), *Arch. Ophth.*, **24**, 228.

EXPERIMENTS IN THE IMPROVEMENT OF READING IN A GROUP OF EDUCATIONALLY SUBNORMAL BOYS.

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This paper attempts to describe in detail the results of an educational programme aiming at the improvement of reading (accuracy, comprehension and speed) in a class of high grade educationally subnormal boys who were all in one or the other respect unsuccessful readers. For the purpose of this paper an unsuccessful reader is defined as a reader whose power of word recognition, of fluency of reading or of understanding is below the level expected from him. It has been assumed that this level is indicated by the mental age, though it has been kept in mind that the result of a verbal intelligence test need not be the final decision as to the intellectual capacity of a child.

Reading, being a cognitive function of the whole personality, should never be considered in isolation and as a mere problem of technique. Personality factors have an immense influence in adopting well distinguishable attitudes towards reading, ranging from complete rejection to an unhealthy craving for reading over a whole variety of reading difficulties concerning word recognition, speed and comprehension. Though these difficulties are very often of a mere technical nature, their "adoption" by a child and continued existence is a frequent consequence of certain emotional difficulties, which need attention either previous to or concurrent with remedial reading training.

As it was believed that difficulties in reading were largely due to a deeply rooted resistance on the side of the children, no attention was paid to any existing physical or neurological shortcomings (auditory, visual deficiencies, etc.). It was felt that Hegge's view (1) was correct who pointed out that nobody had "so far been able to demonstrate any specific factor as highly potent in producing a special reading disability," and that "the beginner at reading commits the entire variety of known reading errors." He concluded that the special reading disability cases are simply those who do not eliminate these error tendencies in the process of training.

Whilst, of course, many of the boys in the particular class under review were not reading-disability cases in the orthodox sense, their slow or non-existent progress in word perception, speed and comprehension was considered to be due to the same constellation of factors responsible for the failure of the typically unsuccessful reader. Initial failure, due to a variety of causes, undermines the child's self-confidence and induces him to find things twice as hard as in ordinary circumstances. A discouraged child might attempt

to find excuses for his shortcomings in real or alleged faults of his environment. His resentful, critical and hostile attitude will make the schooling task more and more difficult for all concerned. The child's resentment will perhaps express itself in overt acts of misbehaviour, turning into a behaviour problem, but he may also very often fasten on the various difficult phases in the reading process without being able to get past them. The child does not succeed in reading then because the ability to read is a manifestation of society, and forces him into nearer contact with it than he can endure or permit. Reading failure may therefore very often be merely another symptom of maladjustment.

This is, in short, the point of view taken by the present paper, and the investigation described furnishes an example of a possible approach which is of necessity still of rather an experimental nature.

The Experimental Group.

The investigation took place in a senior class of the biggest residential special school in England. The school is part of an institution under medical supervision, and progress in school is intimately linked up with the acceptance or rejection of the institution environment. This offers in many ways an ideal opportunity of experimenting under controlled conditions, the children living on the premises and not being directly subjected to any out-school influences except to those of the institution itself. More will have to be said about this aspect later on.

Owing to the long duration of the experiment it was impossible to keep the composition of the class identical throughout, and many boys had left and had been replaced by newcomers by the time the investigation was concluded. The class consisted during the two and a half years, over which the three different phases of the experiment were spread out, of 39 different boys. Their I.Qs., measured on the Binet Test (Terman-Merrill Revision), ranged from 92 to 55 with an average I.Q. of 71. The Intelligence Quotients of the thirty boys taking part in the first phase of the investigation and also in the second (minus five school-leavers) ranged from 92 to 55, with an average of 73. The Intelligence Quotients of the 20 boys participating in the third phase of the experiment are well comparable. The test gave them ratings between 92 and 63, with an average of 74. Of these 20 boys, eleven boys had taken part in the first two phases of the investigation.*

The chronological ages of the boys at the beginning of the experiment ranged from 12 to nearly 16, most boys being between 13 and 14, whilst those of the boys at the beginning of the third phase of the investigation ranged from 12–7 to 16, with an emphasis on the fifteens.

To limit the description of this group to the single heading "Mentally Defective" and to the results of tests is inadequate, because this would imply a far more homogeneous character of the group than was actually the case. Generally speaking, the real problem in working with these children was not so much the inferiority of their intelligence, but the inferiority

* These eleven boys, who participated in the whole of the experiment, rank in all tables and graphs in the same eleven places. As the remainder of the class changed, attention to names is important when comparing test results in the different tables.

of libido. Thus, their lack of directed drive, marked inability to adjust successfully to their environment, immature emotions, pronounced feelings of anxiety and insecurity, in short their inferior emotional personality pattern were found to be a far greater influence on their reading attitude than their inferior intellectual endowment, to which adequate attention had been given in taking the mental age as an index of expectancy. As they were immature in every aspect, the problem of teaching this type of child assumed characteristic new features. Since it was wholly unjustified to isolate the intellectual function from the personality as a whole, the immense bearing of emotional influences on the cognitive faculties had to be considered when designing a training programme aiming at the development of this side of the educationally subnormal personality.

The inferior emotional pattern, characteristic for all boys of this group, had led in many cases to friction with society. Many boys were Court cases, had been thieving and housebreaking, had proved to be " beyond parental control and in need of care and protection," had been persistent truants and were definitely maladjusted. Their relationship to their families was in many cases far from being satisfactory, and proved to be a constant source of irritation and unhappiness.

The institution, which is under the supervision of a psychiatrist, has been very successful in the elimination of the worst features of maladjustment by suitable psychotherapeutic treatment. The children shed soon after arrival much of their conscious and overt feelings of resentment, cease to be serious behaviour problems and begin to show a certain degree of self-confidence. The feeling of security they have thus acquired in the sheltering and protecting atmosphere of the institution does not of course entirely do away with the consequences of years of maladjustment, but provides an adequate starting point for remedial work of all types. School work of the experimental character described in the following pages would be impossible but for the soothing and encouraging influence of the institution.

The experiment consisted of three different phases devoted to three different aims and was spread over a period of two and a half years. The first phase (Jan., 1946–June, 1946, 6 months) was solely devoted to the improvement of word perception. It was immediately followed after the summer holidays by the second phase (Sept., 1946–Dec., 1946, $3\frac{1}{2}$ months) aiming at the improvement of comprehension in reading. The third phase (Feb., 1948–April, 1948, 3 months) followed after one year's interval, during which the ordinary school routine was carried out, and was designed to increase speed of comprehension and to clarify some points having arisen in course of the previous work.

Phase I: Improvement of Word Perception.

Plan of Experiment.

As the lack of ordinary ambition and drive was such a conspicuous shortcoming in the psychological make-up of these boys, means had to be found to spur them sufficiently to put an extra bit of effort into the proposed work. Things were not made easier by the fact that the work was to deal entirely

with reading and was to take up a considerable part of the school time, thus emphasizing the very subject which had been for many boys a stumbling-block in the past and had been associated with discouraging failures.

The hypothesis underlying the whole experiment was the experimenter's conviction that these boys were fundamentally really extremely keen to learn to read, and that only repeated failure had prejudiced them against reading, thereby lowering their efficiency. It was the author's opinion that all these boys had developed more or less an inferiority feeling regarding their scholastic and other attainments. Many of the boys disliked reading only because they had either never been able to acquire an adequate reading technique, or had not sufficient knowledge to utilize their reading. They were averse to attempts at teaching because they had been preconditioned by initial failure, and because they found it beneath their dignity to be seen reading "baby-books," or to have to admit to themselves that they were not far off the detestable reading stage of "The cat sat on the mat."

Much of their misbehaviour seemed to be due to an attempt to over-compensate in some respect, and there was no reason why they should not be able to over-compensate for their many other shortcomings in the field of reading. Inability to read well or to understand well was of all academic work the most conspicuous failure. It was, moreover, of all schoolwork the most attractive subject, opening up, as it were, the gates to such desired pastimes as reading the "comics," "murder stories," or the sport pages of newspapers.

A method had to be adopted which, by giving a feeling of fluency in reading of other than "baby-stuff," would encourage those readers who had stopped or slowed down in their progress after having acquired the rudiments of a technique to pursue reading with renewed energy. As the children in question were "exceptional" in many ways, the method to be used had to take particular note of the type of child to be taught, and methods which had proved successful in other schools were not necessarily suitable in this particular case.

The method adopted by the author and described in the next section was that of a "syllabication drill." It consisted in short of practising the technique of splitting up long and difficult words into the component parts of the syllables. There was no need to understand the meaning of these words as long as accurate pronunciation was practised. Indeed nonsense words were of great help.

The success of this method was, in the author's opinion, mainly due to the psychological issues successfully tackled thereby.

1. It was an entirely new method for the children, unaffected by prejudices owing to previous failures. It started on an absolutely new basis, and the fact that the method used, for example, ungainly typewritten and duplicated sheets instead of the brightly coloured modern books, may have been rather an advantage, as no "conditioned reflex" was liable to occur.

2. It was a simple and merely mechanical method which did not ask for "Comprehension" "Now, tell me in your own words what you have read. What does it all mean?" and taught a few simple rules of pronunciation easily

remembered. The sole task was that of expressing a printed symbol in sound, and the incomprehensibility of the words prevented to a large degree involuntary and detracting associations which a text or words within their understanding might have caused.

3. Another factor, not to be underestimated, was the constant feeling of satisfaction and achievement as the result of each individual lesson. A mentally deficient child is generally unable to plan beforehand and to work ahead, with the results forthcoming only after some considerable time. He wants to see the fruits of his efforts at once, and in order to stimulate him to renewed efforts they should not be too meagre and insignificant either. Having learnt in the syllabication drill, the pronunciation of a long and, for him, meaningless word like "graphological" filled him with more satisfaction than the learning of an ordinary word like "chimney-sweep" the meaning of which is not mysterious.

The charge that a method like the present one is not "purposeful reading," unattractive to the children and not to be encouraged therefore, is not valid. After all, "purpose" is something different for different people, and whilst the task of learning the pronunciation of nonsensical words may be repellent to an ordinary child, the educationally subnormal child with his inferiority complex will snatch eagerly at that very task, which seems to bring him nearer to the coveted knowledge others possess. For him the reading of nonsensical words is "purposeful." After all, it is well known that uneducated persons with an "intelligence complex" use a large and only half-digested vocabulary.

4. The mere fact of being able to read "long words" or even only of being expected to read these "grown-up words" was an immense incentive to these senior boys. The method, therefore, circumnavigated the problem of the "baby-books," the vocabulary of which would have been within easy reach, though the content and appearance of these books would have acted as a deterrent.

As the influence of maladjustment, which was thought to be primarily responsible for unsuccessful reading, was successfully being treated by living in the sheltered security-providing atmosphere of the institution, this obstruction in the learning process had been more or less eliminated. There remained then mainly the great obstacle of the child's own lack of self-confidence, the distrust in his abilities, his intellectual inferiority complex. It was here where the new mechanical drill of syllabicating long words gave them security in the comforting feeling of achievement. They became very rapidly familiar with the act of reading, which was quickly turned from a source of inferiority feelings into a source of pleasure. The creation of this psychological situation was thus in reality only the preliminary step for the subsequent phase aiming at the improvement of comprehension and speed.

The Syllabication Drill.

The drill used machine-duplicated pages with groups of words arranged and partly made up according to certain phonetic rules (3, 7). The immediate technical aim of the drill was to make the boys understand the phonetic value

of certain letter combinations and syllables, and to teach them to pay meticulous attention to the accurate splitting up of words into syllables and to their pronunciation. This technique was developed initially on the basis of nonsense-words, with special emphasis on the study of word endings. This approach had been selected by the author because of the observation that the children, when spelling out an unknown word, often finished, after a correctly pronounced beginning, by a seemingly haphazardly added ending with little regard to the actual spelling. This seemed partly due to the sometimes phonetically rather irregular composition of the end syllables, partly to the mental exhaustion of the reader, who appeared not to have sufficient energy left half way through the word. Both difficulties were done away with by supplying the reader with the knowledge of the correct pronunciation of end syllables, whose "Gestalt" became familiar by repetition. The recognition of these wholes after having spelled half way through a word secured a satisfactory conclusion just in the very moment when the staying power threatened to give way.

Besides the endings, sound combinations of all kinds were practised. Following is a short sample, demonstrating the basic principles of the approach :

This example is built round the word endings –tion, –sion. Nonsense words and real words are used alike.

mo–tion	fi–sion	mo–fi–sion	mo–fi–mo–tion	
na–tion	le–sion	na–le–sion	mo–na–le–sion	mo–na–tion
ra–tion	mi–ssion	ra–mi–ssion	fi–mo–ra–tion	molefication

Or :—

pho–no–lo–gy	pho–to–mo–tion	mo–no–lo–gy	bi–o–gra–phy
pho–to–gra–phy	gra–pho–lo–gy	radiography	radiology
pho–no–gram	radiogram	marconigram	monogram

During the 21 weeks of this syllabication drill each boy received about 56 drill lessons in a small group of ten boys. The method was used for all children throughout this experimental phase except for a small group of ten very poor readers who had to be started off on a phonetic basis before changing over to the syllabication.

In addition to this all boys had at least 39 hours of private silent reading of educationally supplementary readers. This means that each boy spent about one quarter of his school time in reading.

Special note must be made of the atmosphere of general enthusiasm and energy kept up by the class throughout the whole length of this—for me—very tedious part of the experiment. The boys were definitely keen on proving to others and themselves that they were not "dopey" or "barmy," and were very grateful of being given the opportunity "to get level with the outsiders."

The syllabication method combines elements of the phonetic and the sight-reading method. The syllables are learned by sounding and combining the letters where possible, whilst the irregular syllables are recognized by sight from the beginning. The syllables, forming a whole, are soon familiar by sight, and then need no previous dissection into sounds. Thus, when encounter-

ing a new word, the child is not helpless as it often happens when he has been brought up on a mere "look and say" method, nor is he handicapped by phonetic irregularities. Splitting up the word into its syllables brings him at once face to face with the familiar syllables which he knows in other connections and the task of reading the unfamiliar word is largely facilitated.

Seen from a purely academic point of view the advantage of employing this particular method—apart from those psychological considerations listed above—is mainly this :

Though it must be recognized that the correct pronunciation of words far above the level of vocabulary ever likely to be used by these boys is not an advantage in itself, it must not be forgotten that the acquisition of fluency and accuracy will be of benefit to all reading. Comprehension of reading matter is definitely facilitated if the reader is able to keep up a moderate speed of reading without stumbling over difficult words. Even an unknown word does not represent the same obstacle if it is taken in one's stride, so to speak, and has not to be spelled out laboriously, forgetting meanwhile what has preceded.

The acquisition of meticulous accuracy and attention to detail, a necessary consequence of the drill, made its effects felt on all levels of reading. Even many of the "good" readers had proved in the past to be extremely inaccurate, interpolating and omitting syllables and letters and substituting different words, which very often led to misunderstandings or even complete reversals of the meaning of the sentences.

Achievements.

The experimental group of thirty boys was tested in the mechanics of reading on the Burt Test at the beginning of the intensive drill period in January, at the end of it in June and half a year later in December. During the latter half of that year no drill in word perception was given.

Table I sets out in detail the achievements of the thirty boys during that time. As will be observed, there was a great increase in the accuracy of word perception after the re-test in June. The syllabication drill had obviously raised their fluency considerably, some boys adding up to three years to their previous level during the comparatively short time of six months. In the second half of the year when the drill was completely discontinued, only a few boys added perceptibly to their fluency, many remained more or less stationary, and a few dropped a few points, though never back to their original starting point. This second half of the experiment shows, therefore, on the whole the tendency of the educationally subnormal boy to be slow in his progress when left to his own devices, whilst he is able to accelerate his working pace considerably if under tuition.

The re-test in June indicated that two boys had improved during the six months' drill by more than three years, ten boys had added to their original Reading Age between two and three years, twelve boys had gained between one and two years, and six boys had improved by between half a year and a year. None of the boys had improved by less than the six months expected

from ordinary children, though it is obvious that without the drill quite a good number would have added less than the six months to their Reading Age. This becomes even clearer when comparing the achievements of these six months with the test results of the previous six months when no training was given. This same group—less five boys—showed only an average gain of 0·4 compared with the average gain of 1·8 during the experimental period. The most successful reader in the pre-experimental period improved by 1·6 years, whilst the greatest achievement recorded now was a 3·4 years' gain. The poorest reader of the pre-experimental period had lost 0·5 months, whilst the poorest reader of the experimental group maintained during the drill a steady progress, resulting in a gain of 0·6 months.

The Reading Ages in Accuracy measured by the Burt Test varied from 5·7 to 11·6 at the beginning of the experiment. In June after the conclusion of the drill, the lowest Reading Age was 6·5, the highest 13·9.

The graphic presentation of the results of this first part of the experiment (Fig. 1) shows with greater lucidity than the figures some striking facts. It

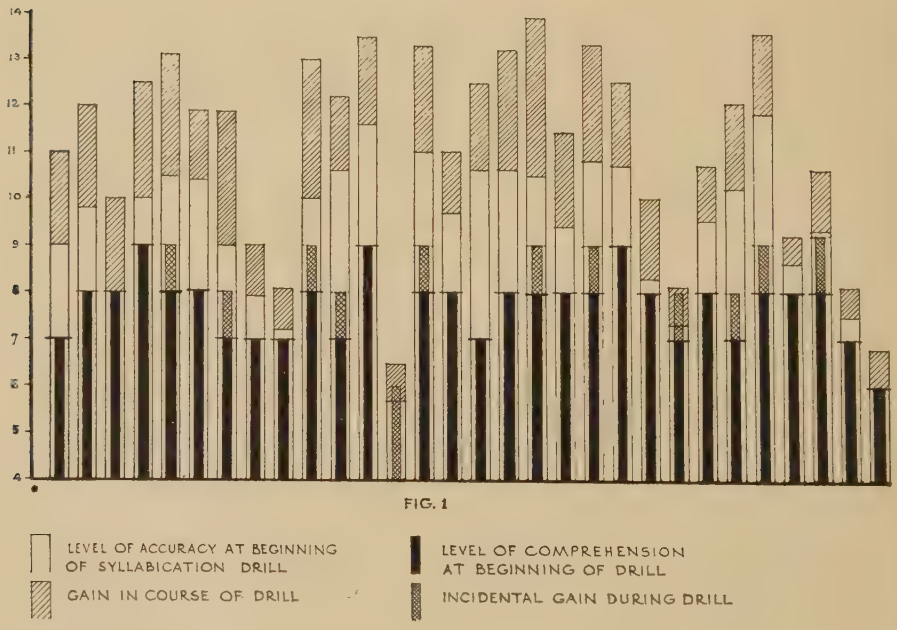
LEVEL OF ACCURACY AT BEGINNING OF SYLLABICATION DRILL
GAIN IN COURSE OF DRILL
LEVEL OF COMPREHENSION AT BEGINNING OF DRILL
INCIDENTAL GAIN DURING DRILL

FIG. 1

points first of all to the great disparity between the well-developed technique of word perception and the badly developed Comprehension of Reading as measured by Burt's Graded Direction Test. It is, of course, true that this group furnishes an exaggerated example of these gaps of up to four years, because the reading drill had more or less artificially raised the ceiling of reading accuracy, which would otherwise not have taken such astronomical features. Still the tendency towards great gaps between Comprehension and Accuracy was noticeable even before the reading drill began, and a glance

on the presentation where the January position is also indicated shows several cases with up to three years' differences.

The graph shows further very clearly that none of the thirty boys involved was able to score a higher comprehension age than nine despite their fluent reading. The discussion of this feature will, however, be better postponed to the description of the second part of the experiment.

TABLE I.—*Showing the Gains in the Mechanics and Comprehension of Reading During the Period of One Year (Phases I and II).*

	Mechanics of reading in decimals.		Comprehension of reading in years.	
	Jan.–June.	Sept.–Dec.	Jan.–June.	Sept.–Dec.
Kenneth V—	2·0	0·4	0	2 (3)
Alfred P—	2·2	0·9	0	1 (2)
George P—	2·0	1·0	0	2 (3)
Jack W—	2·5	0·2	0	2
Edwin O—	2·6	—0·3	1	0
Leslie B—	1·5	0·4	0	1 (2)
Ronald W—	2·9	—0·2	1	2 (3)
Joe P—	1·1	0·2	0	2
Cecil A—	0·9	0·6	0	1
Leslie A—	3·0	—0·1	1	0
Joe K—	1·6	—0·2	1	1
Peter A—	1·9	—0·4	0	2 (3)
Trevor B—	0·8	0·5	..	1
Arthur C—	2·1	0·1	1	1 (2)
William E—	1·3	1·0	0	1
Kenneth F—	1·9	—0·2	0	2
George H—	2·6	—0·1	0	1 (2)
Dennis H—	3·4	—0·6	1	0
Peter H—	2·0	—0·1	0	1
Alfred I—	2·5	—0·6	1	0
John L—	1·8	0	0	1 (2)
Leonard M—	1·7	1·0	0	2
David N—	0·8	—0·1	1	0
Leslie S—	1·2	—0·2	0	0
William T—	1·8	0·1	1	0
Richard W—	1·7	—0·5	1	1
Albert B—	0·6	..	0	..
Jesse F—	1·5	..	1	..
William H—	0·6	..	0	..
Sidney S—	0·8	..	..	..
Averages	1·8	0·1	0·4	1

Phase II: Improvement of Comprehension.

Plan of Experiment.

Previous tests on Burt's Graded Direction Test, the results of which had vastly differed from the investigator's own estimates derived from daily contacts with the children in the classroom, led to an analysis of Comprehension Tests. The term "Comprehension" may be defined as the ability to extract as much of the reading matter as has been put into it by the author. It is obvious that this does not depend entirely on a mere knowledge of the mechanical aspects of reading and the language used, but also on the quality of the mind co-ordinating the various processes involved. In short, it may be said that the upper limit of comprehension is set by an individual's intellectual capacity, and that, provided the necessary mechanical techniques are existent, a child's mental age as derived from a verbal intelligence test roughly indicates his "level of comprehension."

There exist, however, a number of adverse factors which may decrease a reader's "power of comprehension." A diagnostic analysis of the shortcomings revealed by Comprehension Tests led to the conviction that the main sources of failure were to be found in lacking attention to the exact meaning of the printed matter, in a limited knowledge of vocabulary with often most surprising gaps, and lastly often in a lack of speed. There were other influences as well, mainly on the affective level (8), which, however, could be dealt with only from the psychological angle and not merely from the academic side.

Inattention to the exact meaning implied in sentences and paragraphs was a source of frequent mistakes. Many comprehension tests pay particular value to the correct execution of instructions like underlining or crossing out of words, putting certain signs in certain places, etc. The children of our school had, like many other mentally defective children, a rather chequered life career behind them with an irregular school attendance, and neither the little instruction in the tool subjects nor the additional teaching received in other subjects had given them even the smallest inkling of the importance of accurate attention to detail. In that respect they were without a doubt severely handicapped in comparison with other children, and their shortcomings arising from that particular side were not accounted for by their lower intelligence.

A typical example of how the limited vocabulary of these boys affected the results of such a comprehension test like Burt's was offered by the boys of this particular class, none of whom had ever been able to score a Comprehension Age above nine. The item on Burt's scale for age ten which proved to be the stumbling-block for the whole class contains the little word "except." Lack of familiarity with this one word probably reduced many boys' Comprehension Age by at least one year.

The lack of adequate vocabulary, very often due to the long institutionalization of the children, interfered frequently with the understanding of test items. A fifteen-year-old boy with an I.Q. of 78 had spent all his life in institutions. Faced with the question, "Why is a tea-cosy put over a teapot?" with multiple choice for answer he chose, "It prevents the teapot from damaging a polished table." Having been brought up in institutions he had never had

an opportunity of handling a tea-cosy, and actually thought it had a bottom. The same boy scored a test item with pictures of an onion, nut and peanut consistently wrong because he did not know, even at 16, what a peanut looked like, never having seen one in all his life.

Many Comprehension Tests impose a time limit, recognizing thereby the value of steady speed for the understanding of reading matter. All mentally defective boys I have tested so far, but for a few exceptions, score on a time-limited comprehension test considerably lower than when permitted to take their time. Slowness in reaction, however, is a typical aspect in the mental deficiency syndrome, and it was thought initially that nothing particular could be done about it, the best course being the avoidance of time-limited tests unless used for diagnostic purposes.

It was felt that it should not be impossible to train the children in learning to avoid certain sources of failure. Whether such training would indeed be able to raise the "level of comprehension" was largely a question of the exact meaning given to this term. However, such a training was sure to deepen the children's understanding, to bridge gaps, and to make them extract more out of their reading matter than before. This training would therefore certainly assist in increasing the "power of comprehension" even if the upper level of comprehension remained constant or, rather, moved with the mental age.

The exercises which were planned and which will be described in the next section represented in a way a sort of emergency training for institutionalized and delinquent children. The fact of their intellectual deficiency did not really enter the picture, as it was fully accounted for by using the concept of mental age and by working within this given frame. It was not a question of building up in height, but rather of extending in depth. This dimension needed attention, as the long institutionalization of many of the children and the irregular life of the delinquents had deprived them of the moulding and teaching processes of home and school. Much of what is picked up by the ordinary child in course of its daily life and which is with him a matter of course—see the example of the tea-cosy—is alien and strange to the institution and delinquent child. He is unaccustomed to attention to detail, concentration and the use of logical processes like analysis, synthesis, deduction, analogy, etc.

The Comprehension Exercises.

Emphasis was laid on the development of logical reasoning, which automatically included increased attention and concentration. The exercises with their attractive puzzle element were liked by all the children. The previous intensive drill with the resulting immense satisfaction in the achievements seemed to have taken the edge off the hard task of reading. (The experimenter made the observation that in phase III, described later on, newcomers to the class, who had not been through the training-period of the syllabication drill, were inclined to apostrophize exercises which they could not solve as "mental" and "daft"—a comment which had not been heard during the time of phase II.)

Here a few examples :

"Draw a ring round a square."

"Draw a square in a ring."

"Draw a ring in a square if you are older than twelve. If not draw triangle with a ring round it."

"If the letter S occurs more often in the word MISSISSIPPI than the letter P, write the first letter of the second word in this sentence. If P occurs more often than S write the last word of this paragraph."

"Draw a square and divide it into four equal parts by using a horizontal and a vertical line. Write the answer to the question TWO TIMES TWO into the upper right-hand part. Into the bottom left-hand part write the number twenty if you are a girl and the number thirty if you are a boy. Then take away the number which you put in the upper right-hand part from the number in the bottom left-hand part and write the answer into the upper left-hand part."

These exercises, together with the usual exercises in analogy, opposites, deductions, secret codes, proverbs, absurdities, etc., were augmented by a certain amount of vocabulary drill. The meaning of everyday words was systematically taught, the usage explained, and the boys were encouraged to utilize their knowledge. Among these words could be found even such everyday words as frequent and gratis. At the same time the meaning of prefixes (in-, dis-, anti-, etc.) was explained and practised.

The work was done orally and for the whole class on the blackboard. Individual work consisted of cards with the same type of exercises and with a good number of prose pieces with the usual questions concerning content attached to it, which had to be answered in writing.

The group was identical with the group which had taken the syllabication drill, less five boys who had left when reaching the age of 16. These lessons were given daily during a period of three-and-a-half months (14 weeks) and took up (together with "private readings") one-third of the available school-time.

ACHIEVEMENTS.

Evaluation of the success of this part of the experiment proved to be difficult. This was mainly due to using Burt's Graded Direction Test, which in the experimenter's opinion is not really suitable for this type of investigation.

The weakness of this test, as far as the present purpose was concerned, was found to consist mainly in the facts, firstly that there is only one test item for the higher age levels, and secondly, that the test relies primarily, as the name indicates, on the "ability to carry out from a printed order some concrete practical instruction." This meant testing the very reading technique which, as will be discussed in the last part of this paper, was least of all developed in the boys. The Comprehension Age, indicated by the test, was, therefore, in the experimenter's opinion not to be taken as absolute, but showed rather the efficiency of comprehension of a certain type of reading matter. Bearing this in mind, the test itself was useful enough for indicating improvements, gains and losses, in the developing reading technique of the children.

As mentioned, one particular difficulty encountered was due to the construction of the test with only one item per higher age level. It happened frequently that a boy was able to do the test item for one year, was unable to do that for the next year, but solved successfully that of the following year. The experimenter was unable to discover whether the missed year was to be taken into account in the final computation or not. In Table I, which gives the gains in comprehension of reading during the two phases, the figures in brackets indicate the gains if the missed year is reckoned as well, which seems to be quite defensible, as the test item of the year passed is, of course, more intricate than the missed one.

However, even when keeping on the conservative side and considering only the smaller gains, it is obvious that the group on the whole has made great progress during these three-and-a-half months' training. Of a group of 26 boys, there were 8 who added two years and 11 boys who added one year to their previous score. This means that 73 per cent. of the boys had gained by at least one year. Comparing this with the previous six months—the time of the syllabication drill—we find that only 33 per cent. of the boys had improved. In June, before the beginning of the training period, the Comprehension Ages on the Burt Test varied for the whole group between 6 and 9; after the training it indicated Comprehension Ages between 7 and 12. As the test measures only in years, the fact that seven boys did not show any progress cannot be taken as indication that they remained really stationary.

There is little doubt that these exercises taught the children to pay attention to the word and to be accurate, to concentrate on the meaning of what was actually said and not on what was "thought" to have been said, and to remember details, even if they appear at first to be superfluous. They learnt to grasp more accurately the interrelationship of words and to follow a train of thought. Thus their reading in general must have lost—it is to be hoped—much of the superficiality of the completely untutored reader who is left on the surface because he has never learnt or does not even know of the depth underneath. If the results of "Comprehension Tests" are indicative at all of a reader's power of understanding, then it must be assumed that this short training had provided these educationally subnormal boys with some additional techniques, which made them more efficient to respond on their mental level than they had been before.

Phase III: Improvement of Speed of Comprehension.

Plan of Experiment.

The outcome of the attempt of raising the level of comprehension was in many ways unsatisfactory. The shortcomings of the Burt test used in checking improvements made it desirable to repeat the experiment again, and to make sure by the use of more adequate tests that those vast improvements in comprehension, counting in years, could actually take place in a comparatively short time. Thus a third experiment was initiated after one year's intervals, which, though independent of the first two phases described, represents never-

theless something in the nature of an appendix to the original investigation, particularly in view of the fact that some of the boys of the first investigation also took part in this additional experiment.

This third phase had the aim of increasing comprehension by increasing speed and accuracy.

The initial problem was the adoption of a suitable test of comprehension in reading. Burt's Graded Direction Test was felt to be unsatisfactory. Burt's Continuous Prose Test (2), "King of the Golden River," relied too much in the experimenter's opinion on memory, as did Ballard's Test, and was, considering the particular type of boy under consideration, therefore also unsatisfactory. There remained only Schonell's Tests R 3 and R 4 (3) (Silent Reading Test A and B), which were scientifically standardized and did not show the disadvantages of Burt's Tests. However, even these tests have their shortcomings when used with educationally subnormals. The R3 test, I knew by experience, was too easy for most of the class, and did, further on, not go beyond age 11. On the other hand, norms were given for unlimited time—an advantage, the lack of which in the R 4 test made this otherwise very good test not always truly indicative of a child's comprehension of reading. Most of the educationally subnormal children are extremely slow in reading, and imposing a time limit on them represents a considerable and unjustified handicap. However, Schonell's R 4 test being the only English test available after eliminating the others, it was decided to use it and to spend more attention on the question of increase of effective speed than hitherto. Since the experimenter felt that the time limit would lower the boys' final score, the need for an additional test of comprehension cropped up, a test which did not contain such handicap. Thus Gates' (4) Level of Comprehension Test contained in his Reading Survey (5) was included in the test-programme, and its results were assumed to indicate approximately the effective level of a child's comprehension of reading, since the child was still handicapped by ignorance of vocabulary. Previous experimenting with this test had convinced the investigator that the few Americanisms in this test did not appreciably interfere with the results, and that it was well worth while using this test as long as no better instrument was available. In order to gain an idea of the qualitative working of a reader's technique of comprehension Gates' Diagnostic Tests A, B, C, D (6) were also added. They will be described in another section, together with the results achieved.

The battery of Reading Comprehension Tests used for measuring achievements consisted therefore of—

1. Schonell's Silent Reading Test A (R 3) for ages seven to eleven plus, with unlimited time. (Only used for the poor readers.)
2. Schonell's Silent Reading Test B (R 4) for ages 9 to 13 plus, with a time limit of 15 minutes.
3. Gates' Level of Comprehension Test contained in his Reading Survey, for ages 7.10 to 17.8 with unlimited time.
4. Gates' Diagnostic Reading Tests A, B, C, D with time limits of 8 resp. 10 minutes.

It was felt that the use of such an extensive reading battery with its possibilities of cross-checking would make it clear beyond doubt whether a child had actually within a very short time improved on his reading comprehension.

The Exercises.

On the whole this experiment was based on the same principles as those described for phase II. The main difference was that the entire emphasis was put on individual written work, whilst oral blackboard work in "Logic" was entirely cut out. The "Comprehension Cards" took the same form as in the first experiment, though, of course, a greater number with a better grading was provided. Besides this, cards with exercises on the "missing word" principle were introduced, and the older boys received a great number of "dictionary cards" containing sentences with, for them, difficult vocabulary. Their task was to translate these sentences into their own "Basic English" with the help of dictionaries or the knowledge they had acquired.

An incentive was provided by giving the whole experiment the form of a competition with points to win and a weekly grading according to the number of points won. This spurred not only everyone to give his best, but provided incidentally a stimulus for the acceleration of effective speed in reading. But for this feature of the competition no other consideration was given to "increase of speed," nor was the children's attention drawn to it.

During a period of three months each child worked one lesson each day on his "comprehension cards," and had thus done 56 lessons at the end of the experimental period. "Dictionary-words lessons" were about one or two a week. Considering that there were, moreover, two periods a week devoted to "silent private reading," we may say that nearly half of the available time in school was given to reading in one or the other form.

The Experimental Group consisted of 20 boys, 11 of whom had taken part in all the previous work, whilst the remaining 9 were newcomers to the class. Therefore, results of earlier tests could be given in the following tables only in the cases of the 11 boys.

Achievements.

The figures of Table II show that good improvements are possible as a consequence of an intensified training. The improvements in Comprehension, however, are not as staggering as were the improvements in the previous experiment of phase II, measured on the Burt Test. But it must not be forgotten that the Gates Test measures in terms of years and months, the Burt Test only in years. Thus the Gates Test is a much finer instrument, recording improvements more adequately than the Burt Test with its astounding leaps from year to year. It will be observed that one of the three boys in the Table, who were given the Schonell R 3 test, showed an immense achievement. The R 3 test also measures only in terms of years.

The last two columns of the Table show the results of Schonell's R 4 test, and the figures of gain here show the boys often to more advantage than on the Gates Test. On the surface, the results of this test suggest a far greater

TABLE II.—*Showing the "Comprehension Ages" and Gains After a Training Period of Three Months (February–April, 1948).*

	Mental age.	No Time Limit. "Comprehension Age," Gates. Age.	Gain.	Time Limit. "Comprehension Age," Schonell R 4. Age.	Gain.
Kenneth V—	11·6	13·1	0·10	11·3	0·6
Alfred P—	12·5	12·11	0·9	13·3	1·0
George P—	13·8	12·5	3·2	11·0	1·9
Jack W—	11·4	13·7	0·11	13·3	0
Edwin O—	9·6	12·5	1·1	12·3	0·9
Leslie B—	11·6	12·2	0·3	13·0	0·6
Ronald W—	12·4	12·2	0	11·3	0·6
Joe P—	11.5	11·4	2·0	9·9	2·3
Cecil A—	10·7	12·3	2·11	9·6	1·6
Leslie A—	11·9	12·11	0·3	11·3	1·0
Joe K—	11·9	12·8	0·5	13·9	2·0
Gordon T—	11·6	10·8	1·4	11·3	1·6
Ronald St—	10·9	10·3	0·10	9·9	0·6
William T—	9·4	10·3	0·10	10·0	1·6
William W—	9·4	11·0	0·4	8·9	0·6
Fred K—	9·8	11·1	0	11·9	0·6
George S—	9·0	9·9	0·6	10·3	2·9
		Schonell R 3.			
Brian T—	8·11	10·0	1·0	..	..
Ronald Sh—	8·8	10·0	3·0	..	..
George T—	9·1	7·0	7·0	..	..
Averages	..	..	2 years	..	1·1 years

improvement in Comprehension of Reading than had been indicated by the other test. One has, however, to bear in mind that this test sets a time limit of 15 minutes, and that, therefore, the higher figures may be wholly or partly due to increased speed. Only if one is prepared to conceive speed of perception and analysis as an integral part of that entity we call vaguely "Comprehension of Reading Matter," are we entitled to take the higher figures of Schonell's Test as the more satisfactory indices of improvement.

The last but one column, which shows the actual results of Schonell's R 4 test is extremely interesting when compared with the results on the Gates Test. Many boys show a less high "Comprehension Age" on the Schonell than on the Gates Test. This is, no doubt, due to their lack of speed, which was seemingly not yet sufficient despite the good gains during training. Other boys' score when reading under the speed limit is higher than on the Gates. This is mainly due to the fact that the Gates test involves understanding for an increasingly complex vocabulary, whilst the Schonell Test uses items of a

more or less uniform level of vocabulary though increasing the complexity of the logical task involved.

The comparison of the differing results of the two tests underlines the need for an accurate study of the construction of a comprehension test before the test's onesidedness is translated into terms of a child's deficiency in general comprehension.

The Techniques of Comprehension.

Though the results of the various comprehension tests used showed on the average a good overall increase in the efficiency of reading, the individual work with the "Comprehension Cards" in the classroom showed the existence of great differences in tackling various reading situations by the individual boys. One boy proved to be better and quicker in grasping the whole meaning of a paragraph than another, who on the other hand was perhaps better in perceiving and retaining details, and was generally more accurate than the first fast reader.

It has been maintained rightly (4) that comprehension of reading matter necessitates the mastery of various reading skills, and the battery of A. I. Gates (6) has been designed to measure four sharply differentiated reading techniques which, according to the author, have all to be brought into play for meaningful reading. It is, however, quite possible that one or the other technique is poorly developed, with consequent shortcomings in that particular aspect of comprehension.

Gates designed the following four tests to measure the efficiency of reading techniques:

> "Type A—Reading to Appreciate General Significance—is designed to measure an individual's skill in reading merely to get an accurate general impression from the passage.
>
> "Type B—Reading to Predict the Outcome of Given Events—requires, like Type A, a grasp of the general significance of the passage, but it also requires a special type of analysis of the facts given in order to predict which of several possible events will be most likely to happen next.
>
> "Type C—Reading to Understand Precise Directions—was selected to measure rigid, careful, exacting reading.
>
> "Type D—Reading to Note Details—requires recognition and analysis of many details in a passage, but it demands a less definitely organized or integrated grasp and recall of the elements of the paragraphs."

Whilst the present experimenter does not entirely agree with the selection and significance of these four different techniques, it was felt that it would be interesting to record the changes and improvements of the various boys' reading skills in the course of the experiment. A method like that of the "Comprehension Cards," with its insistence on the development of accurate attention to detail, of interpretation and of logical reasoning, must, it seems, inevitably influence the results of these four different tests.

The boys of the Experimental Group were tested on this battery on three different occasions. The first time (Nov., 1946) fell at the end of Phase I of the investigation, and coincided in time with the Burt Test given after conclusion of this phase. The results of this test are, therefore, already influenced by the foregoing three-and-a-half months' exercises.

The second and third time the battery A B C D was administered at the beginning and the end of Phase III, and results are expected to have been highly influenced by the three months' intensive training.

The Gates Battery measures firstly speed of reading easy material for the four different purposes indicated above, and the individual achievements are indicated by age levels. Secondly, it measures accuracy of comprehension, indicating how much of the reading material attempted was correctly interpreted. The score is a percentage figure, 100 per cent. indicating that all the material read has been correctly responded to. Thus the Gates Battery, though not attempting to measure the level of a child's comprehension, furnishes important data concerning the efficiency of reading, selecting with great ease the fast but inaccurate readers, the slow and accurate readers, the readers deficient in one or the other reading technique, etc. Thus these four tests provide at least a partial answer, not to the usual question, "How well does he read?" but to the often just as important question, "How does he read?"

No particular effort was made during any period of the investigation to utilize the diagnostic results of this battery by giving, for example, particular specialized reading material to a child with a diagnosed particular deficiency. Rather it was the intention to observe whether deficiencies in the four techniques would automatically be eliminated or at least made less obvious as a consequence of the "Comprehension Card" method applied indiscriminately to the whole class.

TABLE III.— *Showing the Gains in Accuracy of Comprehension (Percentage Figures) between November, 1946, and April, 1948, in the Four Techniques of Reading: A, Appreciating the general significance of a paragraph; B, Predicting the outcome of given events; C, Following precise instructions; D, Noting of details.* (*A. I. Gates.*)

	A.			B.			C.			D.		
	Nov.	April.	Gain.	Nov.	April.	Gain.	Nov.	April.	Gain.	Nov.	April.	Gain.
Kenneth V—	72	100	28	84	83	—1	73	100	27	86	97	11
Alfred P—	73	92	19	71	86	15	78	82	4	85	92	7
George P—	87	92	5	77	100	23	40	100	60	76	100	24
Jack W—	75	90	15	85	87	2	45	95	50	97	100	3
Edwin O—	72	81	9	68	83	15	63	81	18	82	100	18
Leslie B—	87	86	—1	73	75	2	60	73	13	81	83	2
Ronald W—	72	76	4	85	65	—20	18	90	72	68	80	12
Joe P—	84	75	—9	67	90	23	25	78	53	44	92	48
Cecil A—	50	87	37	28	90	62	75	75	0	100	85	—15
Leslie A—	100	87	—13	62	100	38	59	73	14	95	100	5
Joe K—	100	78	—22	77	81	4	82	81	—1	88	86	—2
Averages	79	85	6	70	85	15	56	84	28	82	92	10

As "Comprehension Cards" were used in the class since the beginning of the second experiment (Sept., 1946) up to the end of the investigation (April, 1946), though with special emphasis during the last three months (Phase III), it is more instructive to compare—at least as far as the acquisition of accuracy is concerned—the results of the Nov. test with those of April. Table III demonstrates, therefore, the influence of these Comprehension Exercises on the accuracy of reading and interpreting for the eleven boys who had been available at both tests.

The great inaccuracy in reading, particularly in the reading of Type B and C in Nov., 1946, is quite obvious, yet at that time the children had already received a certain amount of training in course of the work for Phase II, which had raised their power of comprehension considerably and presumably to a certain degree their accuracy.* In course of the further training during 1947 and the first part of 1948 the children received sufficient training to raise their scores considerably in those techniques which were poorly developed. A few, it is true, have dropped a little, probably on account of a certain "examination fever," but the general picture of improvement of accuracy on all fronts remains unaffected, as shown by the averages for all four tests, which are all well above 80 and close together.

Discussion of the Results.

Considering the results of the initial November test, 1946, it is very clear that the children did generally far better in the two tests A and D than in B and C. Test A measures the understanding for the general meaning of a paragraph, Test D gauges the understanding for relevant details. In both tests the boys achieved an average percentage score of about 80 per cent. It is not further surprising that these children should do best in these two tests because the techniques measured are the most relevant for any purposeful reading. It is obvious that a child, once having mastered the technique of fairly fluent reading and beginning to read for enjoyment's sake, will have to develop that technique of reading which enables him to understand "what it is all about." Many details may remain incomprehensible and are "skipped," yet the child is able to follow the trend of the narrative. Thus the possession of this one technique secures at least a certain minimum of satisfaction.

Details are very likely to escape many readers, and this inattention to relevant items is one of the causes for "non-comprehension" in the narrower sense of the word. The child has grasped that something has happened, therefore good score on a test appreciating the general significance of a paragraph. We cannot be so sure that he knows why and how something has happened because the understanding of interrelations depends not merely on the intellectual grasp, but also on having registered and stored away in the memory various items of information. It is true that the test results of Test D do not show this alleged inattention to details, but this is due, in the experimenter's opinion, to the shortcomings of the test itself. As the test

* Unfortunately the test could not be given at the beginning of Phase II as the necessary forms had not arrived in this country in time.

permits re-reading of the test items most children make use of this opportunity, and obtain thus higher scores than would be warranted by their efficiency in the actual reading situation.

Test C, which gauges careful and rigid reading with attention to detail, shows on the whole very low efficiency, and its results support our thesis of general inaccuracy.

TABLE IV.—*Showing the Gains in Speed and Accuracy of Comprehension during a Training Period of Three Months (February–April, 1948).*

	Speed in years and months.				Accuracy in percentages.			
	A.	B.	C.	D.	A.	B.	C.	D.
Kenneth V—	·5	·5	1·10	— ·1	0	—10	5	0
Alfred P—	·11	1·3	1·9	1·0	—2	3	13	7
George P—	·6	·8	1·8	1·0	2	15	28	10
Jack W—	0·9	2·3	2·7	1·5	1	16	0	7
Edwin O—	0	1·0	1·7	—0·3	—8	8	3	11
Leslie B—	1·7	1·3	2·10	2·7	0	—4	14	—7
Ronald W—	0·4	0·4	3·3	0·2	—9	—10	—5	—3
Joe P—	0·1	0·6	1·3	0·9	4	6	15	5
Cecil A—	0·4	0·6	1·1	0·9	27	19	39	—15
Leslie A—	0·4	1·4	1·9	0·2	—6	10	—5	0
Joe K—	0·8	0·3	3·0	0·6	—7	—13	10	0
Gordon T—	0	0·10	3·1	0·7	0	22	39	8
Ronald S—	0·5	0·3	3·7	1·0	—6	—6	40	2
William T—	0·2	0·1	—0·11	0·1	—5	2	—40	—11
William W—	0·1	0·3	0·6	0·8	4	9	—6	0
Fred K—	3·7	2·0	3·3	2·9	18	—7	21	13
George S—	0·7	0·6	2·2	0·5	23	24	15	—7
Averages	0·7	0·9	2·0	0·9	2	5	11	1

The results of Test B, "Reading to Predict the Outcome of Given Events," are also low. This test is obviously in its very construction on a much higher level than the other three. It not only requires attention to the factual content and a grasp of the events given, but also asks for an analysis of the implications—in fact for the logical conclusion of a train of thought. It is perhaps quite reasonable to assume that this particular technique will be poorly developed in the educationally subnormal, yet the subsequent results show that this technique also is trainable.

Studying the figures of Table IV, which show the gains during the training period of Phase III, demonstrates exactly the same tendencies which came out so clearly in Table III, though the gains during three months are, of course, less than those made during more than one year.

Considering the figures of speed first, it is obvious at once that far less

gains are made on the average in the reading of types A and D than in types B and C. The conclusion is that on the average the boys were already doing fairly well at the beginning of the three months' period, and not much could be added in these two techniques, which came easiest to them anyway. Different is the picture in B and C. Here the efficiency had suffered severely through inaccuracy and unfamiliarity with logical thinking, as had been made clear by Table III. Therefore here was ample room for improvement, and the boys took their opportunity, as witnessed by the almost staggering gains during the short training period.

The percentage figures of accuracy show on the whole the same picture as Table III. A and D improve far less than B and C, because the first two techniques have already been fairly well mastered. Interesting are the many slight drops in the accuracy percentage figures, which show that the corresponding gains in speed have weakened the accuracy in reading—a hint that further remedial training will be needed.

The conclusions after studying the figures of the two tables are simple. The only reading technique which was fairly well developed throughout the class and showed, therefore, least improvement, was that technique without which reading for enjoyment is simply impossible. The other two techniques, B and C—D is not considered in this connection for reasons mentioned above—depending to a large extent on attention to detail and on an analysis of the factual contents, were in nearly all cases undeveloped owing to the fact that they were not primarily necessary for "Reading for Enjoyment." This situation, it may be assumed, is the typical outcome of untutored reading.

"Reading for Knowledge," which would have automatically developed these techniques, was nearly unknown to this class of educationally subnormal boys. They had received very little training in that type of 3R work, and that little only on an elementary stage, as the preliminary acquisition of the mechanics of reading took up most of the time. They had had very little practice indeed of attending to the details of printed matter, of paying due regard to words and of weighing each word for its exact meaning. They had very little idea how much depended on the correct grasping of one particular item and how inaccurate and hasty perception and analysis of words made their whole reading meaningless and valueless. In that respect, we may assume, an ordinary child, being educated in an ordinary school, has far more training, since all his academic work can only satisfactorily be solved by often meticulous attention to the exact meaning of words. Vagueness of ideas and neglect of attention to relevant details, whether in reading or other subjects, will certainly soon be discovered and be remedied.

Training for "Reading for Knowledge" by means of the "Comprehension-Card Method," with its insistence on analytical and synthetic processes, proved its value by assisting to make up in a short time for great arrears of work. It not only increased the power of comprehension, but furthered also perceptibly the standard of accurate interpretation of reading material. This proved, moreover, that the diagnosed shortcomings in the reading techniques were indeed the outcome of the previous untutored reading, and by no means typical for the educationally subnormal boy.

Summary and Conclusions.

Summing up the results of the work described in the foregoing pages the following points may be made :

1. Scientifically designed educational programmes in a senior class of educationally subnormal boys with I.Q.s' between 92 and 55 aimed at the rapid increase of various aspects of efficient reading.

2. To improve fluency and accuracy of word perception a " syllabication drill " was devised, which combined elements of the phonic and sight reading method, and which was considered to be most efficient with this particular type of boys on account of its psychological implications.

3. As a result of six months' intensive training the level of mechanical reading was raised throughout the class well above expectancy. The gains were up to three years and four months, with an average of one year and eight months for the whole class.

4. To improve the power of comprehension of reading matter " Comprehension Exercises " were devised. These involved group and individual training in logical thinking, attention to detail and extension of vocabulary.

5. As a result of three-and-a-half months' training the test scores in " Comprehension of Silent Reading " were raised appreciably ; 73 per cent. of the group improving by at least one year, many by two years.

6. To improve speed and efficiency of comprehension of reading the " Comprehension Card " method was intensified and the progress of the experimental group checked by a battery of tests.

7. As a result of three months' training a perceptible increase of the speed of comprehension throughout the group was noticeable. In the various techniques of reading comprehension the average gains of the experimental group showed to be : 0–7, 0–9, 2–0, 0–9 months in speed of comprehension. Gains in accuracy of interpretation were slight, having apparently suffered by the increase in speed.

8. The increases of the test scores in " Comprehension of Reading " were very pronounced as in the previous experiment. On the time limited test the average gain of the group tested was about one year, with a maximum gain of two years and nine months. On the tests without time limit the group achieved an average gain of two years with a maximum of three years.

9. It has been suggested that the work which increased the results of comprehension tests so considerably did not really raise the " Level of Comprehension," which by definition is roughly equal with verbal intelligence once the necessary technical equipment (fluency and accuracy of word perception—vocabulary) has been mastered. The term " Power of Comprehension " appears to be more adequate, as it suggests the " depth " of understanding rather than the " height " of understanding. It has been thought that the educational programme described has assisted largely in this direction by developing and utilizing reading techniques, which had never been brought into play owing to various adverse environmental factors.

10. A discussion of the significance of the methods used in relation to the academic purpose aimed at and the psychological implications involved has

attempted to point out the impossibility of isolating "Improvement of Reading" as a purely academic problem.

11. Generally speaking the results of the investigation described in the preceding pages indicate that it is well possible to raise the efficiency of the reading of educationally subnormal boys in all aspects within a comparatively short time. But even more important than these scholastic gains for the heightened efficiency in post-school situations are the effects on the psychological make-up of the children, who will gain heightened self-confidence, a decrease of inferiority feelings and an increased feeling of security by the unexpected and, for them, overwhelming rapid success in their weakest subject.

In concluding this paper one cannot avoid pointing out the extreme vagueness of the term "Comprehension." The disunity as to the exact meaning of comprehension becomes apparent in the different constructions of comprehension tests. Interpretation of meaning, execution of orders, insertion of missing words, selecting items of information following a train of thought are among the different principles used, involving very often the additional factors of speed and memory. The Gates battery of diagnostic tests shows conclusively how uneven may be the development of these different aspects of reading for comprehension, and that we may misjudge seriously a child's understanding if testing only one or the other aspect of his reading achievements.

This knowledge of the various techniques of reading comprehension is indeed one of the most valuable pieces of information we have to plan a child's training and to judge his deficiencies and improvements. Far too much stress has been laid on the problem of the teaching of the mechanics of reading. This is, of course, the bottleneck in 3R work and has to be eliminated. But the result of this insistence on the "barking at print" side of the problem led often to neglecting the problem of comprehension, because it was more or less tacitly assumed that comprehension would, so to speak, take care of itself as soon as the mechanics were well established. The literature of the problem of teaching word perception is legion, that on comprehension of reading is negligible.

Reading for comprehension involves a number of psychological processes like perception, analysis, synthesis, deduction, organization, etc. All of these processes need training, a training which is furnished for the ordinary child by the influence of his environment, namely home, school, friends, etc. The quality and level of achievement reached in these processes are determined by intelligence. If it, however, happens that the training is unsatisfactory because of various adverse circumstances, the intellectual processes will in consequence also be unsatisfactorily developed—will become patchy and uneven.

Many causes may be responsible for this result. Lack of life experience, as, for example, in institutionalized children, may be just as important as lack of verbal background due to impoverished cultural surroundings. Emotional maladjustment may play just as big a part as an ingrown habit of carelessness

and inattentiveness. Each of these factors may cause one or the other shortcoming in the techniques of comprehension. Lack of experience will deprive the child of the possibility of establishing important associations between his reading-matter and what he knows; lack of verbal background excludes him from understanding reading matter written in adult vocabulary; emotional maladjustment will not only influence his whole attitude towards reading, but will very often be causative for constant misunderstandings and misrepresentations of the reading matter; whilst lastly, carelessness and inattentiveness are at the bottom of many reading failures, because these unsuccessful readers have never learnt to pay sufficient attention to matters of detail.

As these shortcomings are, therefore, mostly due to lack of suitable training and not so much to shortcomings in intelligence, the whole problem turns to the findings of ways and means whereby to overcome these deficiencies and weaknesses.

The present paper has attempted to show one possible way. The experimenter would like to state that he himself is not entirely satisfied with the methods used. The syllabication method is perhaps limited to certain age groups only, and is very demanding in time and energy. It is possible that its good results are largely favoured by the particularly encouraging atmosphere in the institution, and may, therefore, not easily be repeatable in other circumstances. Still it appears, especially on account of its psychological implications, full of possibilities. As for the "Comprehension Card" method, it is not only easily fitted into the syllabus, but capable of various kinds of development giving continuous intellectual stimulation to the individual. It seems to be a very easy, happy and successful way for eliminating the awkward gap between mental capacity, as shown by an intelligence test, and power of comprehension, indicated by a suitable test of comprehension in reading.

As an afterthought, a possible objection to the great stress put on reading may be encountered in advance. It has been stated that one-quarter to one-half of the school time was occupied with reading in one or the other form. It may be argued that for a special school the amount of time spent on the academic subject of reading for the future hewers of wood and drawers of water is impracticable. It reduces seriously the time available for the training in manual subjects, which will, after all, be primarily needed by these boys in after-school life. To this the reply must be made that first of all reading is nowadays such a key subject that one is justifiable in spending a great deal of time over it even in the case of mentally defective children. Secondly, it must be recalled to mind that many of the children in these schools are without a doubt intellectual borderline and psychological problem cases. It is too often forgotten that even children with low intellectual capacity have their personality problems. Reading was in many cases most probably the subject where these children experienced the first discouraging feeling of failure and defeat. It seems important that the child should be enabled to experience the feeling of achievement and success just on the very field which saw his first tremendous scholastic failure. The psychotherapeutic effect of such experience may be of considerable value in his attempts of reconstructing his life, which had undergone such serious shocks at the beginning.

Acknowledgment.

I wish to thank Dr. C. J. C. Earl, the Medical Superintendent of Monyhull Colony, Birmingham, for the great assistance he has given me during the whole of the investgation, but particularly for his many stimulating and invaluable talks, which have helped me considerably in seeing in the mentally defective child the emotional problems rather than the intellectual shortcomings.

References.

(1) Hegge, T. G. (1934), "Special Reading Disability, with Particular Reference to the Mentally Deficient." American Assoc. on Mental Deficiency, *Proceedings and Addresses.*
(2) Burt, C. (1927), *Mental and Scholastic Tests.* London.
(3) Schonell, F. J. (1945), *Backwardness in the Basic Subjects.* Edinburgh.
(4) Gates, A. I. (1935), *The Improvement of Reading.* New York.
(5) *Idem* (1942), *Reading Survey for Grades* 3 *to* 10. Columbia University, New York City. Form I.
(6) *Idem* (1942), *Gates' Basic Reading Tests, Grade* 3 *to Grade* 8. Columbia University, New York. Form I.
(7) Monroe, M., and Backus, B., *Remedial Reading.* London.
(8) Gann, E. (1945), *Reading Difficulty and Personality Organization.* New York.

LEUCOTOMY IN THE TREATMENT OF PSYCHOPATHIC FEEBLE-MINDED PATIENTS IN A STATE MENTAL DEFICIENCY INSTITUTION.*

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The results of leucotomy in mental hospital practice are already well known and are familiar from the Board of Control's review of 1,000 cases published in 1947.

I am not aware that in mental deficiency institutions the operation has become a practice in application to cases presenting gross abnormality of conduct having its origin in mental disorder which, though not amounting to one of the insanities, has the characteristics of a psychopathic state.

At Rampton we have, as you know, a select population of some 1,200 defectives recruited from the ordinary certified Institutions and Colonies of England and Wales, where their extreme behaviour can no longer be tolerated, as well as those sent to us through the Courts.

A very large proportion of them are young and of feeble-minded grade, quite distinguishable to my mind, from the ordinary run of defectives in mental deficiency institutions, by qualities and characteristics not only of intelligence but also by the exhibition of almost all the text-book manifestations of the psychopathic state.

I am not proposing to define those qualities of mind which in my opinion differentiates them as a class and although they *are* distinctly more intelligent there appears to be one characteristic defect—lack of judgment and foresight—common to all of them as a group. On the emotional side, especially among the females, there is marked instability.

Two definitions of the psychopath or psychopathic personality by Henderson and by Cheyney cover the chief characteristics of our patients. These definitions and many others are to be found in Curran and Mallinson's review of the subject in the "Recent Progress in Psychiatry" number of the *Journal of Mental Science*, 1944.

Henderson, preferring the term "Psychopathic State," says "it does not imply total mental unsoundness, defect or delinquency, but yet allows for modifications of all of them—sometimes approaching the realm of defect, but yet not amounting to it—it is the name we apply to those individuals who throughout their lives or from comparatively early age have exhibited disorders of conduct of an antisocial or asocial nature, usually of a recurrent episodic type, which in many instances have proved difficult to influence by methods of social, penal and medical care and treatment," etc.

Cheyney defines psychopathic personalities as characterized by emotional immaturity or childishness with marked defects of judgment and without evidence of learning by experience. They are prone to impulsive reactions

* A Paper read at a meeting of the Mental Deficiency Section of the R.M.P.A., April, 1948.

without consideration for others and to emotional instability with rapid swings from elation to depression, often apparently for trivial causes. Special features in individual psychopaths are prominent criminal traits, moral deficiency, sexual perversion, etc. Intelligence as shown by standard intelligence tests may be normal—or, on the other hand, not infrequently a borderline intelligence may be present.

You will note their reference to the intelligence level. Our own conviction is that psychopathic deviations of any degree or variety can be accompanied by intelligence levels below border-line and our case-histories will, I think, prove that contention. Further, you will note the statements that they benefit neither from experience, nor from medical care and treatment.

With these definitions in mind then and without unnecessary reservations as to the question of intelligence or mental age level we will be forgiven, I hope, for the rather lengthy title of this paper. This title seemed preferable to the alternatives originally suggested, e.g., "Results of Leucotomy in the Criminal Mental Defective," a title which suggested that we had set out to treat criminality by cerebral operation. Nor was the title "Leucotomy in the Treatment of Defectives of Violent and Dangerous Propensities" quite appropriate since it is doubtful if the psychopathic element in the selected cases would be appreciated as the principal feature (as we venture to suggest) rather than a conception of violent behaviour as a mere concomitant of the mental defect.

In the matter of behaviour then we were quite satisfied that the cases selected, clinically, merited the term psychopathic and for the purpose of selection for operation we had special regard to prominent characteristics such as severe emotional tension with considerable repression of the urge to do something dramatic or of violent nature, almost invariably ending in overt expression by injury to the person so that blood had to be shed, or by damage to property and sometimes violence to other persons.

A few exhibited manic-depressive phases, transient though sometimes more persistent, with suicidal ideas and others, again, dangerous impulsiveness with or without a paranoid attitude.

Time will not permit of a description of more than a few cases, but I think that these in detail will be of interest and will give a better clinical picture than mere tabulation of prominent characteristics, and you will note how they conform to the definitions of psychopathy quoted at the beginning.

All our cases were operated on by an experienced neuro-surgeon, Mr. Hardman, of Sheffield, and it is noteworthy that they were done under local anaesthesia with premedication by Omnopon ⅓ gr. and Hyoscine Hydrobromide 1/150 gr. except for two cases to whom Pentothal had to be given owing to anxiety and restlessness.

We have, to date, operated on 20 cases, 14 women and 6 men. Having reached this number we decided to call a halt in order to review the results achieved and to determine, if possible, what types responded best to the operation, or conversely if the operation was valueless in any particular case.

In the series of 20 cases, 2 were epileptics, 5 were post-encephalitics, and 13 were uncomplicated by demonstrable organic condition. We shall call the

first two combined the "organic class" and the last the "uncomplicated." It will be useful to deal with each sex separately.

Females.—Group A.

	Six months or more.	Markedly improved or recovered.	Improved.	Little or no change.
Epileptics	2	–	1	1
Post-encephalitics	3	–	2	1
Uncomplicated	9	6	2	1 (worse)
	14	6	5	3

Males.—Group B.

Epileptics	*Nil*	–	–	–
Post-encephalitics	2 (E.H.)	–	1	1 (E.H.)
Uncomplicated	3	1 (A.V.T.)	1	1
Died	1	–	–	–
	6	1	2	2

Grand total = 20.

Taking first the women. In Group A we consider as recovered or remarkably improved 6, i.e. 43%; improved in certain aspects 5, i.e. 36%, and as failures or not improved 3, i.e. 21%.

As for the men (Group B), three can be regarded as improved and two are failures; and one died.

It will be noted that it is in the uncomplicated class that we get those cases that can be regarded, up to the present, as showing "recovery" or remarkable improvement.

I think it will be instructive first to devote our attention to those in this uncomplicated class primarily, to give an example from each of the other classes and to consider also the failures.

E. S—, female, born 1918, admitted 30 November, 1937, aged 19.

Previous history, family and early.—When she was only ten months old her father died. Her mother was in receipt of poor relief for some years following, and gave birth to an illegitimate child early in 1920.

The mother remarried, but her four children were cared for in Public Assistance Institutions, E. S— being removed from her mother in July, 1920. She attended an elementary school from age 5–14, and reached standard five before she left.

On leaving school, she attended a Home for friendless girls, and later was sent to a Training Home, but had to be returned to the P.A.I. owing to uncontrollable outbursts of temper.

Summary of conduct from date of certification, 25.i.37, to admission to Rampton, 30.xi.37.—She had furious outbursts of temper with no provocation and attacked staff and other patients. She was described as "terribly violent" and prone to scream and howl like an animal. She attempted to put hot irons on other girls in the laundry. At this time, E. was persistently maintaining that she was pregnant, although in fact she was not. It is recorded that the idea of pregnancy was probably associated with an impression made on her mind when at the age of $2\frac{1}{2}$ years, she witnessed the birth of her mother's illegitimate child when no responsible person was present.

Mental state on admission.—A feeble-minded person. She was hostile, uncooperative, and refused to take her food. She was described as childish in conversation and demeanour, unable to do simple performance tests, and ignorant of facts of common knowledge.

Conduct and progress at Rampton.—1937–1943: During these years her conduct was difficult in the extreme. She very frequently smashed windows and lacerated her arms with glass. She was noisy and obscene, and involved in fights with patients and struggles with staff. In 1939 she climbed on to the kitchen roof in company with another patient and did heavy damage. Again in 1941 she and another patient climbed on to the roof of our Refractory or Isolation Ward. There she remained for over six hours, demolishing glass, slates and coping stones. During this period she was in a state of great excitement, yelling obscenities and oaths while she proceeded with her work of destruction.

She rarely survived a month without some demonstration of violent or unruly conduct and exhibited phases of depression alternating with elation. In 1942 she succeeded in obtaining by stealth, a bottle containing chloral, and drank a quantity with intent to commit suicide. She was all this time a clean and tidy girl and a good domestic worker in her quieter moments.

1944–1946: These years showed little improvement in her conduct. She appeared to be frequently under great emotional strain and to be able to ease this strain only by violence or by mutilating herself with glass. She made several attempts at suicide by tying up her neck.

She appeared to suffer considerably from her emotional state and to be keen to release herself from the burden of the tension and the violent action which appeared necessary to give relief. As none of the usual methods of treatment or management appeared to be of any benefit, it was decided that she was a most suitable case for our first venture in prefrontal leucotomy. This was performed at Rampton on 24.i.47 under local anaesthesia by Mr. J. Hardman.

Post-operative progress.—She made an uninterrupted recovery from her operation, and though slow in cerebration and movement while in the hospital, was co-operative and generally of cheerful disposition. Greediness and meanness for a time were very noticeable—a contrast to previous characteristics. She stated two months after the operation that she had not the slightest inclination to cut her arms or injure herself or anyone else. Emotional tension had disappeared and she has displayed no violent or dangerous conduct. She had occasional sullen and moody days and became piqued if she received less attention than she considered her due. She gave her attention to domestic work, doing this in a clean and industrious manner.

Present mental assessment.—A feeble-minded person whose mental age has recently been assessed at 7 years and 8 months, though before operation this was assessed at 8 years 4 months. Intellectually, therefore, she appears to have regressed slightly.

Her memory for details recent and remote is good. She is fond of reading detective stories and remembers the plot. She sleeps well and has no desire or need for sedatives—a contrast to her state before operation. States that she never has headaches now, does not experience moods of tension ("being all worked up") and is free from depression and anxiety.

Physically.—Well.

Discharged some weeks ago, to her house in a small hamlet, she settled down without any difficulty, and when I visited recently reports were excellent. She took to cycling at once, visiting married brothers and sisters, going to the village shop and making purchases with accuracy, and joining in the housework with zeal and efficiency.

She loves children and exhibits normal affection for her relatives and writes to us regularly appreciative if somewhat illiterate letters.

B. S. G—, female, born 2 October, 1914, admitted 25 February, 1933, aged 18½ years.

Previous history. Family.—Patient is the youngest of a family of nine children. She lived with her father, step-mother, half-brother and half-sister. Patient's step-mother was unable to control her.

Early history.—She made good progress at school, but was, however, inclined to associate with younger children.

Summary of conduct prior to admission.—On leaving school she ran away from situations and attempted suicide on two occasions by taking lysol. She was admitted to a Training Home for six months, where she was found to be indolent and lazy, stubborn and a dirty type of girl. She used to abscond and stay out all night with men, but did not appear to realize the seriousness of her actions. Admitted to a Public Assistance Institution she was there regarded as suspicious and stubborn, and frequently talked about committing suicide. She sulked when reproved and became destructive, but could not account for her actions. She developed a cruel streak and ill-treated aged patients by jumping on them. Her temper was hasty and violent, and she struck both nurses and patients. Her personal habits were filthy and she would not wash herself unless forced to do so. She liked to be in the limelight and was content to be blamed or praised.

The patient was admitted to a Mental Colony where her conduct rapidly deteriorated. She became a great danger to other patients and staff, and threatened older infirm patients with a lighted paper, and attempted to set the building alight; she smashed windows, tore plaster and bricks from the wall of her side-room, then smashed the woodwork with the bricks. She caused self-injury with broken glass or any sharp implement available. She used most obscene and offensive language to annoy the staff, and was the ringleader in any subversive plots.

Mental state on admission.—Patient was found to be a feeble-minded person. She failed at simple arithmetical problems and performance tests. She was noisy and excitable during interrogation, and spoke freely about wanting to smash windows.

Conduct and progress at Rampton up to 23.vi.47, *when leucotomy was performed.*—1. Following admission in February, 1933, her conduct was extremely bad, and there was a repetition of all the misconduct and extreme behaviour exhibited before her admission. She dismantled her bedstead and smashed the windows of the doors with it.

2. Her attitude during her very brief intervals of calm was childish and fatuous.

3. Those quiet periods ended suddenly and dramatically with an outburst of violence by smashing, screaming and obscene language. She made frequent attempts at suicide and lacerated her arms with enamel from her chamber or broken glass from the nearest window. She inserted needles into her body, bit pieces of flesh out of her arms, ligatured her legs in an attempt to constrict the circulation, and smeared her body with faeces.

Finally, in August, 1946, she smashed panes of thick plate glass by standing on her bedstead and hammering the glass with her elbows. All the main structures were severed down to the bone bilaterally, and necessitated extensive surgical repair. Following convalescence, patient reverted to her usual behaviour and so leucotomy was decided upon.

Conduct and progress following leucotomy, 23.vi.47.—Operation was performed under local anaesthesia. During the proceedings she co-operated extremely well and appeared to enjoy the attention and position of importance which she found herself to be in.

Following operation, apart from being slightly confused on the second day, she made an uninterrupted recovery. She became co-operative and pleasant, polite to the nurses, placid and calm, and began to do things for herself, and took an interest in her appearance. She refrained from using bad language and exhibited a degree of shyness or self-consciousness when she heard other patients swearing.

She now began to exhibit an interest in the welfare of other patients, and as to conduct generally, this was above reproach.

She was set to work in the Nurses' Residence in a position of trust and with a certain degree of liberty. Her work there improved and she took a pride in any task given her.

28.iii.48: Interviewed. Some months ago (and recently) her memory for events recent and remote was good.

She enumerated the way in which she had improved, as follows:

(1) I no longer wish, or feel a desire or impulse, to do myself harm.
(2) I do not now get feelings of depression.
(3) I do not now feel impelled to smash windows; previously this idea had a fascination for me.
(4) I sleep well and I have no wish to have sedatives or sleeping draughts.
(5) I do not wish any longer to attract attention to myself.
(6) Every day seems the same now.

She has been out shopping on several occasions and after the initial feeling that people were looking at her, that she was conspicuous, she soon forgot her embarrassment and enjoyed the outings.

In this case I think several points are worth noting :

(*a*) Behaviour over which she had no control.

(*b*) Behaviour which gave her morbid pleasure because of all the trouble and excitement it caused and the part she was playing in it.

(*c*) The immediate improvement and the peace of mind following many years of fevered conduct and a mind in ferment.

(*d*) The statement that every day seems to be the same.

(*e*) The statement that she does not want to be bothered with (or interested in) misbehaving !

(*f*) The statement that noise and excitement cause her to become a little confused and she wants to detach herself from, instead of joining in, any excitement.

She looks well, has a good sense of humour, and is an excellent worker.

Was transferred to an ordinary M.D. Colony in July, 1948.

E. M. H— (female), born 23 May, 1933; admitted 13 June, 1942, aged 9 (? unique age).

Previous history. Family.—The parents appear to be normal people of average intelligence, and the other children of the family are normal.

Mental deficiency was first observed in early childhood.

Summary of conduct prior to admission.—Before admission to a C.I., it is reported that this child was destructive, spiteful to other children, and cruel to animals, liable to sudden outbursts of violence, in which she attacked others and tried to injure herself. She smashed windows, struck her head against the wall. She frequently destroyed her clothing and bedding and was actively dirty in her habits.

Mental state on admission.—Her intelligence was far below the normal for her age. She could name only a very small range of common objects, and her articulation was defective. She answered questions in monosyllables and could not sustain the simplest conversation. Her mental age was assessed at $4\frac{1}{2}$–5 years.

Conduct and progress at Rampton up to 8.xi.47 *when leucotomy was performed.*—This child was violent and filthy in habits from admission till the date of her leucotomy. She made impulsive attacks on the other children, and if not restrained would have caused them serious injury. At times she had outbursts of screaming lasting several hours and violently struck her head against the walls of her room. Her sexual habits were depraved and she frequently smeared her body and the walls of her room with faeces. She proved completely unresponsive to training. Latterly it was necessary to accommodate her in the special observation ward for her own safety and to avoid injury to the other children.

Conduct and progress following leucotomy.—In the immediate post-operative period the patient was restless and noisy, used obscene language and struck at nurses and attempted to bite them. This phase lasted for two days, after which she became quiet and co-operative. She was incontinent of urine for a few days and for about a week she was apt to destroy her clothing by picking. Thereafter there was a dramatic improvement in her conduct and mental state. She has responded well to re-education and has been clean in her habits and person.

She has rapidly acquired normal social accomplishments such as eating with a knife and fork instead of bolting her food like an animal and she is both pleasant and amenable. She is still, however, somewhat greedy and will go on eating indefinitely if not stopped. Since the early days of the post-operative period she has not exhibited the slightest degree of violence.

Present mental state.—She is now attending our school.

Formal testing has not yet been carried out, but there has been definite improvement in her general intelligence since the operation. She shows fair powers of concentration and will persevere with simple handicrafts.

Towards the staff she is friendly, and her parents have noted that she is much more affectionate towards them.

In this case the change can be regarded only as dramatic and the youthful age makes this case of peculiar interest. Despite her imbecility there is a peculiar intelligence which enables her to understand simple conversation, and she is quite observant. In fact she has even a sense of humour.

During a recent interview she could give her attention to simple questions, and addressed individuals present by name. Expressed the wish to go home to her parents, and asked me when we were going to have our Sports.

Her appearance is that of a healthy if ungainly child, and the pronounced increase in weight is worth noting. From being a depraved and hopeless little animal she is now quite a sociable, clean child.

I. S— (female), born 2 March, 1916; admitted to Rampton 22 May, 1946.

Previously detained.—Hants M.H. 17 March, 1933, to 18 November, 1936.

Previous history. Family.—Patient is an orphan. She has no known relatives.

Early history.—She was placed in Croydon Orphanage when 18 months old, and remained there until 14½ years of age, when she was sent to a Training Home in Kent.

Summary of conduct prior to admission.—She proved to be quite unmanageable and was sent to Kent Mental Hospital in March, 1933. There she suffered from frequent uncontrollable outbursts of anger during which she was violent and destructive. She suffered from attacks of hysteria and imaginary complaints. On two occasions laparotomy was performed without any abnormality being discovered.

Mental state on admission.—A feeble-minded person who was childish, retarded and ignorant. She failed at simple performance tests and lacked planning power. She was emotionally unstable. She had no shame and indulged in grossly depraved habits. Her language was most obscene. Her mental age was assessed at 9 years.

Conduct and progress at Rampton up to 12.v.47 *when leucotomy was performed.*—Following admission patient complained of pain in her chest. This was investigated and no abnormality was found. She then complained of painful cervical glands which had been produced by compressing the glands with her fingers. She frequently threatened self-injury and suicide. She smashed windows, was defiant, obscene, violent and extremely hostile. These violent episodes lasted from a few days to a few weeks. She became more and more hypochondriacal, demanding frequent medical examination so that other complaints followed, cystitis, vaginal discharge or any condition which she knew about. She frequently produced lesions on her body. Malingering was always followed by a period of smashing and violence. (She dismantled her bedstead and used it as an implement to smash the plate-glass windows of her side-room.)

She was most subversive and plotted vicious sexual attacks on the staff, and appeared to thoroughly enjoy her phases of violence. She lacerated her arms and then removed the sutures, hoping that the doctors would re-suture her. She secreted glass in her vagina and lacerated her arms on returning to her room after having been sutured.

She openly admitted that she liked to experience pain. It was necessary for mechanical restraint to be used for a period as her violence became so extreme. The tension appeared to be mounting and self injury no longer gave patient the relief which it had previously done. Patient readily gave her consent to operation.

Progress following leucotomy.—On 12.v.47 leucotomy was performed under local anaesthesia. Patient co-operated well and chatted continuously whilst on the operating table. She made an uneventful recovery and co-operated with the nursing staff throughout her convalescence. She became happy and contented and took an interest in reading, knitting and embroidery. She frequently sang and appeared to be enjoying for the first time a tensionless care-free life. She apologized when she was rude to a nurse and appeared to be genuinely repentant.

On 25.ix.47 patient became very sullen and bad-tempered, but this mood soon passed off. It was of very short duration and was unaccompanied by any desire to self inflict injury or threats of suicide. She was again repentant and apologized for the inconvenience caused. Regret was something entirely new to the patient's make up.

It was noticed that she became easily tired and was unable to concentrate for any length of time.

She requested to be given a job with some responsibility attached to it, and asked to help the staff with the care of the children in the school. This was granted and she was employed in this capacity, looking after difficult refractory children of various grades. She performed her duties methodically and gave complete satisfaction, but when they became too difficult she asked to be relieved of the responsi-

bility. She occasionally resorted to bad language, but excused herself because of the trying nature of her employment.

She states that she at last enjoys life and has no inclination to take her own life or inflict injury.

She has become a popular figure and has developed a pleasing gay personality. She now looks to the future and is enquiring if she will be able to leave Rampton sometime in the near future.

This case shows fluctuations in the matter of progress, and although at times we experienced qualms about the ultimate result, I am to-day very optimistic.

During an interview a week ago she struck me as being a pleasant girl, self-conscious and perhaps sensitive, and for whom we must do much to compensate for the sense of inferiority due to her friendless state and illegitimacy (July, 1948).

A. V. T— (male), born 25 December, 1923; admitted 28 February, 1936, aged 13.

Summary of conduct prior to admission.—At the C.I., T— was described as a nervous child subject to outbursts of ungovernable temper and liable in his rage to break anything he could lay his hands on. He was described as voluble and difficult to restrain at times while at others he was apathetic and sad. He had no interest in manual or scholastic training. He twice attempted to commit suicide.

Mental state on admission to Rampton.—A feeble-minded person. It was difficult to obtain or hold his attention and he had little power of concentration. He was unreasonably apprehensive.

Conduct and progress at Rampton.—During the first five years of his stay he was an impulsive, unstable, excitable youth given to homosexual practices. He became upset over the merest trifles and would then rush wildly about and knock over anything to hand. He frequently had to eat alone as others upset him so easily and he would then smash the crockery. Occasionally smeared faeces on himself and on the walls of his room. He required very careful and tactful handling to avoid outbursts, but even then a month rarely passed without impulsive, noisy, destructive or violent outbursts.

1941–1946: These years showed a little improvement as his outbursts were less frequent, but he remained emotionally unstable, and impulsive.

In December, 1946, his mental age was assessed at 12 years 4 months by Terman-Merill tests and 14 years by Porteus Maze tracing. He had considerable insight and at times asked to be protected from his impulses to smash.

Prefrontal leucotomy was performed on March 19, 1947.

Conduct and progress following leucotomy.—For three months following the operation he lived quietly and contentedly on the hospital and appeared to be mentally at ease. When removed from hospital, however, he soon became discontented, restless, and wandered aimlessly about. He again appeared at times to be under some emotional tension and to be unable to settle long to any job, but his outbursts of excitable and noisy conduct were short-lived. He stated that his worried condition was due to fretting over past sexual malpractices.

It is striking that he appeared relieved for almost three months immediately following his operation, though improvement was thereafter not maintained, without interruption.

Mental condition.—Intellectually he appeared unaltered and his mental age was still just over 12 years.

In March of this year, patient was asked by a medical visitor how he felt since the operation. In reply he said he felt very much better and proceeded to discuss in a vivid and lucid manner how he felt inwardly since the operation. He wished to emphasize that it was not until about four months afterwards that he became aware of an inward peace of mind with freedom from the impulse or urge to do something violent. This contrasts with the record of his progress as described above, and therefore we must assume that this patient had now lost insight into his condition. Did he fail to appreciate that, though improved, he still had emotional outbursts, or did he act impulsively, to a lesser degree of violence than formerly, but without experiencing in the same acute way the urge to do so?

Personally I thought the patient to be still improving, and in conversation it was obvious that the acute anxiety he used to exhibit had largely disappeared and even in his sudden lapses there was not the same explosiveness or viciousness.

Interviewed this month, July, 1948.—His memory for recent and remote events

is quite good. He is sure that the operation has been a complete success, and in describing his feelings he says " the tension with inclination to smash has disappeared and the impulse to act in an absurd impulsive fashion is no longer present.

" If the idea enters my mind, there is no positive urge to act upon it." Again, he says, that in his view it was four months after his operation before he experienced a change in his mind. Although in August and October of last year he did experience a short attack of impatience, and repeated once the action of sweeping things off the table there seems to me to have been on that occasion an understandable precipitating or exciting factor.

Since October, however, he says, that he has not experienced any tendencies to smash or to throw objects. " My mind, he says, for a time, until April, 1948, was not so active. I found that the skill I had as a chess-player had deteriorated 75 per cent. I was one of the best chess-players and on three occasions won the tournament, now I was only a very average player." (To substantiate this I should say that the patient was an extraordinarily good chess-player.)

" When I was doing cross-word puzzles, I found it hard to pick up the clues. On the other hand I can enjoy reading now ; previously I lost patience and could not concentrate on the plot."

Last week (19 July, 1948) he said he had largely regained his skill as a chess-player, and was amused to think that an inferior player was able, subsequent to his operation, to beat him. The same player to-day is no match.

He has been employed for the last three months in the ward pantry where he looks after the crockery and he is gratified to note that there is no inclination to smash these articles as was his wont.

I am impressed by the steady improvement after a period of uncertainty.

These, then, are examples of cases in which the results appear to be, so far, extremely satisfactory. There are others with equally impressive case-histories in whom we have recorded improvement.

Consideration of our failures and those in whom the improvement is not considerable leads me to think that where there is a definite paranoid attitude, especially if it is coupled with organic nervous disease, the operation conveys no marked permanent benefit. This is shown in the case of (E. H—), a post-encephalitic with Parkinsonism, dangerously impulsive, who made assaults on persons whom he imagined were annoying or persecuting him. Or again in the case of (M. O—), a female patient post-encephalitic whose erotic behaviour, sexual perversion, and moral deficiency have remained unaffected although physically she has improved considerably. In the case of (M. A—), a hostile schizoid paranoid personality type there has been deterioration, not so much as to conduct, as in the general mental picture—showing signs, I think, of incipient dementia, with restlessness, distractability of attention, spasmodic, loud and hollow laughter, etc.

In conclusion, if we are to set out to determine from an accumulation of evidence from Mental Deficiency Institutions, where leucotomy is contemplated or has been introduced, what type of patient showing psychopathic characteristics derives real benefit from the operation, and there were substantial corroboration of the favourable results I have indicated from this group of 20 cases, then a characteristic of the psychopathic state, or of a particular group therein, as expressed in the definitions quoted at the beginning of this paper—that it is immodifiable by any form of medical treatment—may, happily, have to be qualified.

Further, it may be that from the results obtained in a carefully selected group of mental defectives exhibiting psychopathic states that we may glean

some information as to the precise clinical types, psychotic or not, that should respond most favourably to the operation.

The majority of these patients have a degree of insight up to and after the climax of their emotional state that enables them to discuss their feelings in a quite rational manner, such as the schizophrenic, for instance, is incapable of.

I have to thank medical officers of the institution for preparing in much detail the case-histories for the purpose of this paper, and I have also to acknowledge the permission of the Board of Control to present this paper to you.

Since this article was first written in April, 1948, those in the markedly improved category have maintained their progress and even shown further evidence of stabilization ; no case has relapsed into the failed category. Five cases have been discharged and two more are about to be.

Operations have been resumed and a wider group of clinical types will be submitted for treatment in the course of the year.

PREFRONTAL LEUCOTOMY IN MENTAL DEFECTIVES.*

By M. Engler, M.D.,

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Since the introduction of prefrontal leucotomy by Moniz in 1936, an ever-increasing number of psychotics have been subjected to this operation. Results have been very satisfactory in certain types of psychosis and psychoneurosis, especially in obsessional tension states, in agitated depression, and in patients with considerable apprehension and anxiety, while less favourable results have been reported in many cases of schizophrenia, hebephrenia, and others. Naturally, with the number of cases operated on, experience has grown, and psychiatrists, neurologists as well as psychologists are nowadays, to some extent, in a position to determine which case is likely to benefit from the operation, and where leucotomy should rather not be resorted to.

It is understandable that, since certain types of brain disorder have responded so well to this operation, one should feel tempted to find out whether other afflictions of the central nervous system might not show good results as well, especially when any other treatment, applied before, had proved ineffective. Ström-Olsen and his co-workers, among their thirty cases, operated on four epileptics with considerable behaviour-disorder, and report much improvement in three cases and slight improvement in the fourth. It would, however, be interesting to hear whether this improvement is still holding good now, nearly five years after the performance of the operations. Thorpe's two cases were delinquents with post-encephalitic disorder of conduct. Freeman and Watts used prefrontal leucotomy in patients who were free from psychosis, suffering from recurrent carcinoma, thalamic syndrome, tabes dorsalis, and trauma to the cauda equina. In all these instances the indication for the operation was relief of pain. Alfred Meyer had the opportunity of investigating the brain of a patient who had been mentally normal but had been suffering from a basal meningioma, and in whom a prefrontal leucotomy had been performed. Although some improvement was noticed in these cases, the results have been far less striking than in psychotics with anxiety or tension states.

At St. Lawrence's Hospital, Caterham, forty-four mental defectives were leucotomized between March, 1944, and December, 1946, the first case by Mr. Crombie, the others by Mr. McKissock or his assistant Mr. McCall. One of the cases must, however, be excluded from this review, as a considerable hydrocephalus of the right lateral ventricle was found during the operation, which had to be abandoned owing to the danger of intracranial haemorrhage.

The ages of the patients, at the time of operation, ranged from 17 to 47

* A paper read at a meeting of the Mental Deficiency Section of the R.M.P.A., April, 1948.

years, 9 being between 17 and 20, 21 between 21 and 30, 11 between 31 and 40, and 3 between 41 and 47, the average age being 27 years and 9 months.

As to the type of defectives selected, all groups are represented, from feeble-mindedness to lowest grade of idiocy, the overwhelming majority—75 per cent. —being low-grade imbeciles and idiots. Among them were 16 defectives who also suffered from more or less severe epilepsy, and 15 had a superadded psychosis, partly of the paranoid, partly of the schizoid, and partly of the manic-depressive type, with hallucinations, ideas of persecution, and religious insanity ideas. In some of the most intractable cases electric convulsion therapy had been carried out prior to the operation, with either absolutely negative result, or followed by a deterioration of conduct.

It is obvious that no improvement at the intellectual level of these patients was expected, but a change of their behaviour disorder to the better. All these patients, whether feeble-minded, with a remarkably high intelligence-quotient, or low-grade imbeciles and idiots, whether complicated by epilepsy or psychosis or not, displayed more or less the same very severe disorder of conduct. They were restless, excitable, and irritable, had often screaming fits lasting several days and nights, compelling us to keep them secluded, they were destructive to bedding and clothing, wet and dirty, they often had a tendency to self-mutilation, endangering their lives by banging their heads against the walls, or, on the other hand, became so violent that they constituted a permanent menace to the nursing staff or to other patients. In many of them proper control was only possible by either using large amounts of sedatives, or by keeping a nurse permanently at their bedside—so difficult to manage with the present shortage of nurses.

The majority of the operations were performed during 1945 and the first half of 1946. We, therefore, have had the opportunity of observing these patients after their operations for from 1½ to 3 years approximately. I would like to point out here that in compiling records such as this one is easily biased, often quite unconsciously. To avoid this I have interviewed the medical officers in control of these cases, and all the sisters and most of the nurses, who had been in charge of them long before and then after the operations. Only after comparing very carefully their valuable information have we arrived at the conclusions to be recorded now.

The results have been rather unsatisfactory.

Of the 43 patients under consideration, 5, or 13·15 per cent., died between one day and nearly one year after the performance of the operation, one of a subarachnoid haemorrhage on the day following the operation, another 24 days later of cerebral softening—in this case some degree of hydrocephalus had been found at the operation. The third died after six weeks of toxic myocarditis. One patient suddenly collapsed four months after the operation and died, and the fifth survived nearly a year to die of broncho-pneumonia. Unfortunately permission to carry out a post-mortem examination had not been granted in two of the cases, but I have no doubt that their death, directly or indirectly, resulted from the operation, as all had been rather healthy specimens previously.

In 4 of the remaining 38 cases there was a considerable increase in the fre-

quency and severity of their epileptic fits. One of them has now frequent *status epilepticus* lasting several days, and practically uncontrollable by our orthodox methods. This patient, though epileptic, had never before been in a *status*. Contrary to the findings of other writers, who reported frequent epileptiform convulsions following the operation, which, however, had ceased some time later, not to reappear again, our 4 cases show a definite and lasting deterioration as far as epilepsy is concerned.

In addition to these 4, 3 more patients who had been free from epilepsy prior to the operation started having fits afterwards, one in the first few hours after the performance of the operation, the second twenty days, the third eight months later. In all these cases an increasing number of fits is reported now. 18·41 per cent. of our cases have, therefore, either become worse or had epileptiform convulsions added to their former cerebral affliction. It goes without saying that these convulsions contribute a great deal to their general physical and mental deterioration.

Considering their behaviour disorder, the results were as follows:

Three patients showed and still show a remarkable improvement. One of them should, at least in my opinion, be excluded from the statistical point of view. She is a medium-grade imbecile, half-Chinese, who, on the whole, had been quiet and well behaved. At times she became restless and noisy, and had screaming fits for no apparent reason. After a day or two she would calm down and be her own self again for a considerable time. In this case some degree of arachnoiditis was found at the operation, and a large amount of fluid released. The following dramatic improvement is, in all probability, due to cessation of intracranial pressure.

The two other cases, however, must be regarded as star successes. One girl, a high-grade imbecile with a superimposed psychosis of the paranoid type, had been emotionally unstable, extremely troublesome and abusive, had screaming fits, and required frequent seclusion. Now, nearly two years after the operation, she works well in the laundry. She is still noisy and troublesome at times, but incomparably better than before.

The other girl, a low-grade imbecile with schizoid mannerisms, emotionally very unstable, used to have outbursts of screaming lasting for several days. She is now quiet and well behaved, and is doing a great deal of useful work in the ward. Since the performance of the operation, nearly three years ago, we have had no trouble at all with her.

Seven of our patients, or 18·41 per cent., can be regarded as slightly or very slightly improved. They are perhaps less noisy, less excitable and less violent; some are still wet and dirty. In some of them nursing and supervision are easier than before, but the change is certainly not striking.

Thirteen of the patients, or 34·19 per cent., are absolutely unchanged, and consume the time of our nursing staff just as much as before.

Twelve, or 31·56 per cent., are worse or much worse. They have deteriorated mentally, if such a thing was still possible, are now filthy in their habits, and are real terrors in the wards. They are spiteful, aggressive, use obscene language, they are exceedingly destructive, and many of them have to be kept under restraint.

Three other patients, two male and one female, became so much worse after the operation that they had to be certified under the Lunacy Act and sent to mental hospitals. The girl, an epileptic, feeble-minded, with a superimposed psychosis, became hallucinated, saw rats and black men in her room, and was often so aggressive that she was a permanent menace to the other patients as well as to the nurses.

Of the two male patients, one showed a remarkable improvement lasting approximately five months. After that he gradually relapsed to his former condition and eventually became absolutely unmanageable, threatening and dangerous.

If we look at this balance-sheet, we find that a very considerable improvement resulted in 5·26 per cent., a slight or very slight improvement in 18·41 per cent. of the patients. In more than three times their number, however, there was either no improvement at all, or such a deterioration of the disorder of conduct that many have now to be kept under restraint, or require more nursing supervision than before, or had to be sent to mental hospitals.

The question now arises : Should one operate on mental defectives exhibiting disorders of conduct, or not ?

Before answering this question, let us compare the positive and negative results in our series of patients.

I have just pointed out that in 5·26 per cent. of our cases a remarkable improvement of the behaviour disorder was achieved through the operation, a slight or very slight improvement in 18·41 per cent. With a bit of good will one might, therefore, say that nearly 24 per cent. of those that survived the operation could be regarded as more or less successful. The rest, however, are an utter failure. It is certainly of interest that the great majority of the patients who benefited from the operation belonged to the higher grade, and possessed some personality.

It must be admitted that many of the patients were very quiet and well-behaved immediately after the operation, some of them, in fact, too quiet for our liking. This state lasted for weeks in some, for months in others, then a gradual return to the former condition was noticeable. Similar observations have been made by other investigators as well.

Many factors may account for this phenomenon. First of all, prefrontal leucotomy is not to be considered a minor operation as suggested by some writers. It is a rather serious, if not to say brutal operation, and the severe upset of the nervous system following it may be regarded as a shock from which some of the patients recover quickly, while others require months to do so. That during the state of this upset the patient remains quiet, and exhibits none or only very few of his disorders, can easily be understood. The return to his former condition may be due to the fact that other paths of association take over the function of those destroyed by the operation, as suggested by Golla and by Cobb. This view is shared by Hutton.

Another very important factor is how the operation has been performed, whether the so-called anterior or posterior cut was made, and whether enough fibres have been severed.

Without wanting to go into anatomical details, I may just mention that in

cases with little deterioration small incisions may be sufficient, while in those with considerable deterioration an extensive destruction of the thalamofrontal radiation is necessary. The most illustrating and interesting investigations by A. Meyer on ten brains of patients who had undergone prefrontal leucotomy demonstrate very clearly how often this aim of the surgeon is achieved either very unsatisfactorily or not at all. And in the cases of Meyer the surgeon had to deal with brains of psychotics, or even one mentally normal individual, where one must assume the anatomical structures to be normal or near to normal.

Take in contrast the brain of a mental defective, especially of one of low or very low type. These brains are asymmetrical, large parts often atrophied, the convolutions very flat and simple, the arrangement of the blood vessels anomalous—in other words the contours are absolutely inconstant, and the poor surgeon is faced with the more than grave problem of how to find the thalamofrontal radiation. I have no hesitation in stating that in mental defectives of low type this bundle will not be cut properly in nine cases out of ten.

We must further take into consideration the mortality rate, which has decreased from 20 per cent. in Lyerly's series and 10 per cent. in McGregor and Crombie's series to 4·8 per cent. in the cases reported by Dax, 2·5 per cent. in those reported by Frank, and 2 per cent. in those reported by Parker. Our fatality rate was 13·15 per cent. I agree with all previous writers that, no matter which method is applied, fatal haemorrhages are unavoidable. If the brain is approached by the technique of Lyerly, who inserted a lighted speculum into the skull, blood-vessels can be seen and pushed back, but rather extensive dura openings are necessary, and the danger of secondary infection and adhesions with their grave consequences increases. If, on the other hand, the blind technique is used, no matter whether with a leucotome or a brain needle, anterior or posterior cuts, thin-walled cerebral vessels, either a cortical vein or a branch of the anterior or middle meningeal artery will in one or another case be injured, and death will follow either immediately after the operation or many weeks later.

Then there is the definite danger of either increasing the frequency of fits or of creating new epileptics. Dax recorded one patient with convulsions after the operation, Freman and Watts, in their initial reports, 3 among 80 patients, Frank 18 among 200 patients, McKissock 4 among 50 patients. A. Meyer mentions one who had died in *status epilepticus* seventeen months after the operation. In our series of patients 4 out of 38 cases became definitely worse, while 3 more started having fits after the operation. This amounts to 18·41 per cent. And I may be allowed to underline that this was not a transitory phenomenon, but a lasting one, contributing considerably to the deterioration of the patients. Whether the technique used in the operation, or adhesions, or any other damage to the brain were responsible for these convulsions is impossible to state. In the case investigated by Meyer no plausible explanation could be found.

Finally, I have to admit that in many of our cases, in addition to the worsened behaviour disorder, a certain degree of mental deterioration has taken

place. May I now be allowed to outline in a few words the role played by the frontal lobes as regards intelligence?

Ferrier, as far back as 1878, had already stated that our intellectual power depended greatly on our frontal lobes, a view again expressed by Fulton as lately as 1943. On the other hand, Erickson was of the opinion that the frontal lobes had nothing to do with intelligence. Cobb also denied that they were centres for foresight and imagination. Careful study of leucotomized persons and of the changes in their behaviour disorder, especially, however, anatomical investigations of their brains, have contributed a great deal to establish beyond doubt the immense importance of the frontal lobes. Even if one does not go as far as Rees in identifying them with Freud's super-ego, it is now, thanks to the work of Jacobsen, Freeman and Watts, Le Gros Clark and of A. Meyer the consensus of opinion that memory, imagination, social sense, self-consciousness and future planning, all highly intellectual functions, depend on the integrity of these parts of the brain.

Observations on psychotics after leucotomy have led to varying reports regarding intelligence. Hutton, for example, states that personality changes for the worse are frequent findings, but that changes in the intellect are negligible. Ström-Olsen and his co-workers, on the other hand, report a slight deterioration of the intelligence level, which they attribute to the technique used in some cases. Cuts made too far posteriorly have been made responsible for leading to loss of initiative, and gradually to dementia. Rylander, carrying out mental tests on patients before and after leucotomy, found a decrease in the mean of intelligence quotients of his subjects from 93·97 to 83·75—in other words, a deterioration of approximately 12 per cent. And Freeman and Watts made the remarkable statement that failures after operations were due to incisions in the wrong places, or to the fact that the patient had undergone such a deterioration already that he was acting as if he had no frontal lobes at all.

A decrease in the level of intelligence of 12 per cent. as reported by Rylander may not matter very much in a psychotic with a certain personality and an intelligence quotient of 90 or 100 or even more, but must matter a great deal in a mental defective of low grade whose intelligence quotient may be between 20 and 30, or even lower. He can scarcely afford to lose a single point.

Mental tests on our low-grade defectives have taught us how little social sense, imagination or memory they have, and how they are unable to foresee and to plan. The development of their frontal lobes must, therefore, be exceedingly poor if we agree that those functions are invested in them.

If, through the operation, we decrease further this very low intellectual level, and, at the same time, destroy that small amount of personality which they may have possessed without improving their disorder of conduct, we have done them more harm than good.

Taking into consideration the small percentage of real improvement on the one side, the danger of a fatal outcome, of epilepsy, of a deterioration of the behaviour disorder, and of mental deterioration, in a large percentage of these patients, on the other side, we have come to the decision to abandon this

operation in our mental defectives, and are of the opinion that, at least in those of low grade, it should definitely not be undertaken.

Only those defectives who possess a higher degree of intelligence as well as a higher standard of personality stand a chance of benefiting by the operation without too great a deterioration of their mental level and their personality. I am in agreement with Frank that, before submitting a mental defective to this operation, a very thorough investigation of the quality of his present and past personality should be made.

May I take this opportunity to thank the superintendent, Dr. Lindsay, who has followed the observations on our patients with very keen interest, for all the encouragement, help, and advice he has given me; further, his deputy, Dr. Firmin, who actually selected most of these patients for the operation and supervised them afterwards, for her permission to publish the findings. Special thanks are due to our staff, male and female, who not only carried out their duties with great devotion, often under considerable duress, but assisted me with great enthusiasm in my investigations resulting in this review.

References.

Cobb, S. (1943), *Borderlands of Psychiatry*. Harvard University Press.
Dax, E. C., and Radley Smith, E. J. (1943), *J. Ment. Sci.*, **89**, 182.
Erickson (1941), quoted by W. Freeman, *J.A.M.A.*, **117**, 517.
Ferrier, D. (1878), *The Localization of Cerebral Disease*. London.
Frank, J. (1946), *J. Ment. Sci.*, **92**, 497.
Freeman, W. (1941), *J.A.M.A.*, **117**, 517.
Idem and Watts, J. W. (1938), *J. Nerv. Ment. Dis.*, **88**, 589.
Idem (1942), *Psychosurgery*. Baltimore: C. Thomas.
Idem (1944), *J. Ment. Sci.*, **90**, 532.
Idem (1946), *Amer. J. med. Sci.*, **211**, 1.
Fulton, J. F. (1943), *Physiology of the Nervous System*. London.
Golla, F. L. (1943), *J. Ment. Sci.*, **89**, 189.
Hutton, E. L. (1947), *ibid.*, **93**, 31; and **93**, 333.
Jacobsen, C. F. (1938), quoted by J. F. Fulton, *Physiology of the Nervous System*, **1**, 462; **2**, 467.
Le Gros Clark, W. E. (1948), *Lancet*, **1**, No. x, p. 353.
Lyerly, J. G. (1938), *J. Flo. med. Ass.*, **25**, 203.
McGregor, J. S., and Crombie, J. R. (1942), *J. Ment. Sci.*, **88**, 534.
McKissock, W. (1943), *ibid.*, **89**, 194.
Meyer, A., and Beck, E. (1945), *ibid.*, **91**, 411.
Idem, Beck, E., and McLardy, T. (1947), *Brain*, **70**, 18.
Idem and McLardy, T. (1947), *Proc. R.S.M.*, **40**, 141.
Moniz, E. (1936), *Tentatives opératoires dans le traitement de certaines psychoses*. Paris: Masson et Cie.
Parker, C. S. (1946), *J. Ment. Sci.*, **92**, 719.
Rees, T. P. (1943), *ibid.*, **89**, 161.
Rylander, G. (1939), *Personality Changes after Operations on the Frontal Lobes*. London.
Ström-Olsen, R., Last, S. L., and Brody, M. B. (1943), *J. Ment. Sci.*, **89**, 165.
Thorpe, F. T. (1946), *Brit. Med. J.*, **1**, 312.

Part II.—Reviews.

Studies of the " Free " Art Expression of Behaviour Problem Children and Adolescents as a Means of Diagnosis and Therapy. By MARGARET NAUMBURG. New York: Nervous and Mental Disease Monographs, 1947. Pp. ix + 225. Price $5.50.

In this monograph on art therapy in psychiatry six cases are described with clinical details so that their parallel artistic and emotional progress can be followed. The authoress is an art teacher with good psychological knowledge and insight. The patients were all young, and she had initially to coax them to begin expressing themselves graphically at all, since they still suffered from the discouragement of formal school drawing lessons. She had the patience and restraint to succeed in a remarkable degree, and this book will be of great help to psychotherapists. It is a pity that in republishing these six studies the references were again given separately in each case instead of being condensed together at the end of the volume. The 99 illustrations suffer from all being in monotone with mere verbal descriptions of the colours, which are sometimes the most important feature; surely at the high price of this book some of them could have been in colour. These are minor criticisms of pioneer work showing, in Miss Naumburg's words, that " the language of images is the speech of the unconscious." E. S. STERN.

Lawless Youth: A Challenge to the New Europe. London: Allen & Unwin, 1947. Pp. 252. Price 10*s.* 6*d.*

During World War II a committee of men and women of thirteen nationalities met in London and held a series of meetings at which they discussed in a personal capacity many problems connected with juvenile crime. This instructive volume, which as its keynote outlines a policy of treatment of the individual and not punishment, is the result. Nearly two-thirds of the material includes contributions from Margery Fry (" Treatment not Punishment "); M. Grünhut (" The Juvenile Court: its Competence and Constitution "); H. Mannheim (" The Juvenile Court: its Procedure "); Wanda Grabinska (" The Juvenile Court: Measures to be taken "); C. D. Rackham (" The Juvenile Court: Auxiliary Services and After Care "); and a chapter on " Prevention " by Anonymous. The rest of the book sets out in an appendix critical summaries of the law and practice concerning the treatment of young offenders in ten European countries. A second appendix discusses the Treatment of neglected and problem children in Norway.

Much erudite thought and carefully considered opinions are presented. They are particularly instructive because of the well-balanced judgment of the contributors. The publication at the present time, when social evolution in many countries is delayed and juvenile crime greatly increased, is opportune.

The psychological and psychiatric approach to juvenile crime receives occasional notice in the text. But no section considers this matter in detail. The medical profession was not represented on the Committee, and Dr. Mannheim states that no complete agreement within the Committee was obtained upon the question of the psychological and psychiatric examination of the juvenile offender. The subject necessarily involves many practical difficulties,

not the least being the fact that reliable examinations are lengthy and adequately trained specialists in this field are few. Mannheim points out the very real danger of encouraging superficiality in this matter. He states that in Massachusetts, one of the most progressive States in the U.S.A. as far as the treatment of delinquency is concerned, the law provides that the Court has to order a thorough physical and mental examination of a juvenile before he is finally committed to an institution. And he quotes from "Juvenile Delinquency in Massachusetts as a Public Responsibility" as follows: "After five years' experience with the law, the Department of Mental Diseases commented on 'the practice in some instances to comply with the law only in letter by having routine examinations made under unsatisfactory conditions.' . . ." Many will agree with Mannheim that, for the time being, psychological and psychiatric routine examinations should be restricted to certain categories of cases selected according to the type of offence, or of offender, or of the kind of treatment contemplated by the court.

The book is by experts for experts, and will influence thought, and it may be believed future practice, in the treatment of juvenile offenders.

W. Norwood East.

Psychopathology and Education of the Brain-injured Child. By A. A. Strauss and L. E. Lehtinen. New York: Grune & Stratton, 1947. Pp. 206. 46 illustrations.

Alfred A. Strauss has, for a number of years, attempted to distinguish "secondary," "exogenous," brain-injured defectives among the feeble-minded from "primary," "endogenous," hereditary cases of the same range in intelligence. This book represents a summary of his work carried out at the Wayne County Training School, and will be welcome to all interested in this field.

The authors' description of the psychopathology follows that of Goldstein in his investigations on brain injury in adults. They find in *perception* a difficulty in distinguishing objects from their backgrounds, a liability to be distracted by unessential details, and a tendency to perseveration. These symptoms they investigated by various special tests, e.g. the short exposure of cards portraying an object on a figured background, and the copying of patterns with marbles on a board. In investigating *thought* they use sorting tests; a collection of various objects is given, to be grouped according to likenesses or to suitability for the situations in contrasting pictures; they find that brain-injured children rely on unessential, far-fetched hypothetical relationships, and are liable to be easily diverted into irrelevancies. For *behaviour* they use a "diagnostic rating scale," a list of pairs of contrasting qualities which, like the tests, distinguish brain-injured defectives from other defectives, and also from young schizophrenics and psychopaths; the most characteristic features they find to be overactivity, lack of inhibition, incoordination, perseveration and the "catastrophic reaction"—an emotional outburst in the face of difficulties.

Their main principles in education follow from the symptoms. They are: to avoid distraction by using plain surroundings, to check overactivity with obstacles put in the way of the task (e.g. sticks to be placed in holes in a box during counting, and clay to be engraved with a stylus in writing), and to insist that simple ideas are fully grasped before going on to the more complex.

The authors are naturally at some pains to establish the existence of their "exogenous" or brain-injured child, as distinct from the "endogenous" defective. They give figures for differences in the rates of gain in mental age, sex distribution and bodily growth, which are statistically significant. One might, however, question the criteria on which the exogenous cases are diagnosed. These criteria are: a normal family stock, a history of injury, minor

neurological signs and specific results from the authors' tests. In some of the cases quoted the history is indefinite and the neurological signs are vague, so it would seem that the diagnosis was made principally on the test results. These do appear to select a certain type of child, overactive and distractible ; but that this type is due always to brain injury (and that brain injury is not equally liable to produce other types) can hardly be considered established.

No figures are given for the results the authors have obtained by their special methods of education, though in some particular instances, which are described in detail, they have been remarkable. It is to be presumed that statistical results will become available later when the methods have been longer in use, and will indicate how far they may be considered specific for teaching cases of brain injury.

W. MAYER-GROSS.

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Some Remarks on the Determination of Proteins in Cerebrospinal Fluid.

(1) Izikowitz' method for fractionated protein determination has been used for analysis of total protein, globulin and albumin in pathological lumbar fluids. Mean errors found are 2·9 per cent. for total protein, 4·5 per cent. for globulin and 2·6 per cent. for albumin; these values being higher than the mean errors given by Izikowitz from his material of normal lumbar fluids. The relation between the titration errors and the concentration has been discussed, as well as other possible reasons for the errors observed.

(2) The small amount of protein present in lumbar fluid can be determined by ultra-violet light absorption measurements. The analysis can be performed on the filtrates instead of on the precipitates.

(3) As precipitant an equimolar mixture of mono- and dipotassium-phosphate is to be preferred to ammonium sulphate. The filtrates can be analyzed whether the determination is done by light absorption or by titration.

(4) Electrophoretical analysis is on account of the low protein content in cerebrospinal fluid not yet a method suitable for clinical investigations.

(5) Spiegel-Adolf and collaborators have assumed the presence of compounds containing nucleic acid, probably nucleoproteins, in pathological lumbar fluids. Abnormal globulin/albumin ratios could perhaps be explained by the presence of nucleic acid compounds. (Authors' abstr.)

Course of the Blood-Sugar Curve in Mentally Healthy Subjects and in Schizophrenics during Adrenalin Tolerance Tests for a Day and a Night.

A distinct difference in the capacity for overcoming the strain on the blood sugar and pulse rate induced by the authors' tolerance tests is clearly shown. As an attempt at explanation, it is tempting to adopt the term introduced by Cannon (1935), "homeostasis," especially as a number of leading physiologists and clinicians, such as Fulton (1938), MacFarland and Goldstein (1939) as well as White and Smithwick (1942), have endorsed his views. In the terminology of Cannon, it may be stated that the aim of the authors' tests was to bring about a temporary disturbance in the "homeostasis" (equilibrium of the body juices). Such a disturbance can apparently be more easily induced in some mentally diseased than in healthy subjects. Thus, the sympathetic nervous system which, according to Cannon, in all such conditions of danger to the organism, intervenes as a regulator of the internal equilibrium, must react more strongly and at an earlier stage in the mentally diseased. This is indicated by the higher blood-sugar percentage in the reported cases. (Authors' abstr.)

Gynergen Abuse in Cases of Migraine.

In the present paper seven cases are described in which a great increase in the frequency of the attacks followed on Gynergen (ergotamine tartrate) medication. Apart from an increase in the headaches, these patients suffered from constantly feeling sick, and in two cases cramps were also met with.

In all cases mentioned, the patients had been permitted to dose themselves with Gynergen—in six of them from two injections a week to two a day were taken; the seventh took large quantities of tablets.

In three of the cases the patients refused to give up their abuse of Gynergen for different reasons. Three gave it up entirely, and a very great improvement took place at once. In the seventh case the use of Gynergen was reduced, and the frequency of the attacks also lessened.

With increasing frequency of the attacks it will often be appropriate not to increase the dose of Gynergen (or allow the patient to give himself injections); in such cases it will probably be better to try the usual periodical medication with small doses of phenobarbital or Bellergal, and possibly a change of milieu, etc. (Author's abstr.)

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Preliminary Studies on a Possible Serum Toxicity in Schizophrenia.

The positive result of the investigations may be said to be that, with the technique adopted, a significant difference in serum toxicity can be shown between a group of catatonic and hebephrenic patients on the one hand and a group of normal subjects on the other; and that this difference is presumably in some way connected with a hemolytic principle in the serum of both groups. The task with which the author is now confronted is—by a considerable increase of the existing material and a more thorough analysis thus facilitated—to endeavour to ascertain

whether this difference is really connected with the schizophrenic disease and not with secondary factors, such as medication, diet, essentially different modes of life, and so forth. (Author's abstr.)

Investigations into the Metabolism of Androgen in Normal-haired and in Hypertrichotic Schizophrenic Women.

Determinations have been made of the androgen excretion in a total of 64 women (between the ages of 20 and 60). 29 were normal-haired (10 schizophrenics + 19 with no mental or endocrine affections), and 35 were hypertrichotic (masculine-haired) (33 schizophrenics + 2 with other psychoses). The examinations were made according to a slightly modified form of the Zimmerman-Callow colorimetric method, and they were carried out daily on 24-hour urine for 3 or 4 weeks (a total of just over 1000 analyses).

The normal-haired women excreted on an average 4·2 mgm. " steron " in 24 hours ; those who were under 41 years of age excreted on an average 5·3 mgm., while those over 40 excreted on an average 3·7 mgm. The hypertrichotic women excreted on an average 5·9 mgm. in 24 hours ; those under 41 excreted 7·3 mgm., and those over 40 excreted 4·6 mgm. on an average.

The tendency established here to an increased excretion (output) of androgen in hypertrichotic women seemed to be present no matter whether the women suffered from schizophrenia or another form of psychosis, or were mentally normal. This tendency to increased androgen excretion could not be traced in schizophrenic women with normal growth of hair. Thus the androgen output as such seems hardly to play any pathogenetic part for the schizophrenia, but the question suggests itself whether such a part should not be attributed to other functions of the adrenal cortex. Further investigations will have to be made for an elucidation of this question.

The androgen output from the adrenal cortex seems generally to be of importance for the occurrence of hypertrichosis in women. (Author's abstr.)

Some Observations on the Hippuric Acid Test in Schizophrenia.

(1) 69 cases of schizophrenia and 28 normal cases have been tested with the intravenous hippuric acid test according to Quick, and a reduction in many catatonic cases, especially in the so-called active phase, has been established.

(2) If glycine is supplied in cases with reduced formation of hippuric acid, a pronounced or moderate increase is obtained in some cases, while in a smaller group no increase of the secretion is observed. (Author's abstr.)

A Study of the Lipid, Phosphorus and Sugar Content of the Blood in Chronic Alcoholism. I.

A study of 21 cases of chronic alcoholism has been made ; 7 cases were classified as delirium tremens, 3 as hallucinosis alcoholica, and the remaining 11 as chronic alcoholism. The results may be summarized as follows :

A rise was found in most cases in the total cholesterol and, to a slighter extent, in the ester cholesterol of the plasma.

The total lipin phosphorus and the ether-soluble lipin-P values were observed to be slightly higher than the normal mean.

The ratio between phosphatides and total cholesterol was in almost all cases below the normal mean.

The following phosphorus fractions were studied with relation to whole blood, plasma, and erythrocytes : inorganic phosphate, pyrophosphate-P, hexosephosphate-P, diphosphoglyceric-acid-P, total acid-soluble, and total phosphorus. As regards inorganic phosphate, hexosephosphate-P, total acid-soluble and total phosphorus no divergences from the normal were observed, at least not to any appreciable extent.

The pyrophosphate-P values were lower than the normal mean in all cases except one in whole blood, and in all cases in the red cells.

The diphosphoglyceric-acid-P values were higher than the normal mean in whole blood in the total number of cases excepting one, and in the red cells in all cases.

The P-fraction values of the plasma varied within the normal limits.

It is reasonable to assume that the changes in the plasma lipids are due to unvaried and in most cases inadequate diet. The changes observed in the pyrophosphate-P and the diphosphoglyceric-acid-P may perhaps be ascribed to the same cause, although they may be influenced in part by disturbances in the ester synthesis in the red cells caused by chronic alcoholism.

The patient's blood sugar varied within the normal limits, except for one case of mild hyperglycemia. (Authors' abstr.)

A Study of the Blood Bilirubin, Indican and Ketones, and of the Vitamin B_1 Content in the Urine in Chronic Alcoholism. II.

Twenty-one chronic drunkards were examined ; of these 7 belonged to the group delirium tremens, 3 to that of hallucinosis alcoholica, and the remaining 11 to that of alcoholismus chronicus. The results may be summarized as follows :

The serum bilirubin was in no case higher than it can be in a healthy, abstaining person who has fasted for 22 to 36 hours.

A rise in the serum indican was observed in barely one-fifth of the cases. This does not support the opinion that indicanemia would be characteristic of some form of chronic alcoholism.

The ketones in the blood exceeded the highest control value in two-thirds of the cases, which indicates a disposition to ketonemia in chronic alcoholism.

In two-thirds of the cases vitamin B_1 was completely lacking, very low, or very near the lowest limit.

The variations from the normal observed in bilirubin, ketones, and vitamin B_1 seem to be chiefly due to the inadequate and unvaried diet which is characteristic of alcoholics. In addition, the low vitamin B_1 values are apparently influenced by gastro-intestinal disturbances of resorption and the greater consumption of vitamin B_1 caused by alcohol. (Authors' abstr.)

Pneumoencephalographic Findings in Some Cases of Leucotomy.

Thirteen leucotomized patients, showing no, or slow improvement after operation, were examined at least one year after operation, with pneumoencephalography. In all these cases signs of a slight to moderate cerebral atrophy were found, in conformity with results previously reported by Freeman and Watts. In four cases porencephalous cysts were observed. The degree of cerebral atrophy and the clinical results of the operation did not show any distinct connection.

(Author's abstr.)

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Prefrontal Lobectomy (*Excision of the Anterior Areas of the Cerebrum*). *A New Form of Psychosurgery.*

A new type of psychosurgical technique, namely, prefrontal lobectomy, is described. The advantages of this procedure over prefrontal lobotomy are presented.

The results of prefrontal lobectomy are reported in 14 patients with 85·7 per cent. showing moderate to marked improvement. This series of cases consisted predominantly of chronic schizophrenia, 11 of the cases being classified as dementia praecox. Moderate to marked improvement followed lobectomy in 82·6 per cent. of the latter group of patients. In general, the results for this new psychosurgical procedure compare well with the published reports for prefrontal lobotomy.

(Authors' abstr.)

Intelligence and Emotional Stability.

1. The clinical findings in the examination of over 30,000 men gave a very definitely higher incidence of emotional instability in the men diagnosed mentally retarded than in those diagnosed non-retarded.

2. Down-grading for instability decreased as " M " scores advanced.

3. The rate of decrease in down-grading diminished appreciably in the range of average and superior intelligence.

4. The evidence suggests that the rate of incidence of psychoneurosis and other patterns of emotional instability declines as the degree of intelligence advances, although this becomes much less evident in the upper ranges of intelligence.

5. Possible explanations and interpretations have been discussed.

(Author's abstr.)

Comparative Action of Anticonvulsant Drugs.

A comparative study has been made in a group of institutionalized epileptic mental defectives of the anti-convulsant action of dilantin, tridione, and several barbiturate derivatives. The results indicate that dilantin has the most marked anticonvulsant action in most cases, but that maximum action is only achieved with toxic doses in severe cases. Tridione has definite anticonvulsant action against *grand mal* seizures and is particularly effective in combination with dilantin. Tridione has been successfully used intravenously to terminate status epilepticus and is tolerated in high concentration. Barbiturate derivatives are occasionally effective alone in individual cases but are most effectively used with dilantin.

(Author's abstr.)

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The Myth of Psychopathic Personality.

(1) The concept of psychopathic personality is at present in a transitional state. While most clinical workers in the field still move at the superficial descriptive level, some attempt for delimitation is already being made, though it is still mainly at the descriptive level ; while a few, as yet in great minority, are attempting to interpret the reaction in terms of underlying dynamics emphasizing motivation rather than behaviour.

(2) One of the greatest difficulties in the whole situation is that the majority of writers do not offer adequately worked up case material, which therefore precludes a dynamic formulation.

(3) Some workers appear to get away from the previously held concept that the condition is hereditary and constitutional. Instead, the emphasis on psychogenesis appears to be gaining ground. Unfortunately, this remains for the most a statement without casuistic material to support it.

(4) Equally, the grouping is being more and more narrowed, and some workers exclude from the consideration of psychopathy the psychotic reaction types, even if and when they have an undoubted antisocial and delinquent character. But the great variety of hysterical and neurotic conditions are still grouped with psychopathy, when these conditions include some definite antisocial and delinquent behaviour.

(5) On the basis of carefully studied material and due consideration being given to dynamics of the situation, the following reorientation is offered, namely :

(*a*) That what is commonly diagnosed now as psychopathic personality should be divided into main groups ; the symptomatic or secondary psychopathy, and primary, essential, or idiopathic psychopathy.

(*b*) Under the heading of symptomatic or secondary psychopathy are to be included those cases of psychoses and neuroses that have a strong antisocial or delinquent aspect, and the case in question should be put into its proper clinical heading (psychosis or neurosis as the case may be). Thus a case may be diagnosed as manic-depressive psychosis, hypomania, antisocial delinquent trends. The term psychopathic, therefore, may be completely eliminated from this group of cases as being only confusing.

(*c*) The clinical worker who puts emphasis on motivation rather than behaviour will have no difficulty in uncovering pointed psychogenesis in all these cases. By the same token they are amenable to psychotherapeutic treatment and therefore offer a far more hopeful outlook than is currently given to psychopathic cases.

(*d*) In the remaining small group are to be put those individuals who do not fit at all into any of the cardinal reaction types ; above all they seem to lack any psychogenetic aspect even when definite effort has been made to elicit the same. They form a disease of its own designated as anethopathy, a specific mental disease, characterized by a special personality organization having in particular a virtual absence of any redeeming social reaction ; conscience, guilt, binding and generous emotions, etc., while purely egoistic, uninhibited instinctive trends are predominant. They are as close to the constitutional as can be found. The term psychopathic personality may be omitted from these cases too.

(6) With the larger number of psychopathic personality cases being properly put under the respective headings of the cardinal reaction types, and the balance being put in a new group designated anethopathy, nothing remains of the original concept of psychopathic personality, for which reason it should be completely deleted from psychiatric nosology. The term may be left entirely for lay use.

(7) A number of cases have been cited demonstrating the various types of psychopathic personality with emphasis on the dynamics of the situation.

(Author's abstr.)

APRIL.

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The Ceiling Effect of Glutamic Acid upon Intelligence in Children and Adolescents.

1. Glutamic acid accelerates mental functioning in human subjects.

2. The acceleration is general and is not restricted to segments of the intelligence and personality of the individual.

3. The greatest improvement in intelligence and performance test scores occurs within the initial 6 months of treatment, after which the acceleration is diminished and appears to be approaching a ceiling after one year of therapy.

(Authors' abstr.)

Clinical and Electroencephalographic Observations Concerning the Effect of Tridione in Epileptic Patients.

1. Clinically, tridione appears to be of most value in the treatment of the epilepsies associated with cerebral palsies of the milder type. *Petit mal* types responded next best. Tridione appears to be of slightly less value in the treatment of psychomotor epilepsies.

2. Improvement in the EEG, following the administration of tridione, did not necessarily coincide with clinical benefit. *Petit mal* cases showed the best EEG response to tridione. The psychomotor group also manifested EEG response which was somewhat better than that of the spastic group.

3. *Grand mal* types and myoclonias showed consistently the least clinical and electroencephalographical improvement and the greatest number of toxic effects.

4. Severe untoward reactions occurred in 21 per cent. of the cases. Except in 2 cases where severe toxic manifestations were present, clinical improvement did not ensue. Toxic effects were not as evident on the EEG tracings as they were clinically.

5. These toxic effects can be minimized by careful observation in a clinic or hospital and by judicious adjustment of the dosage. However, about 10 or 13 per cent. of the patients did not tolerate the drug well, because of either toxic effect or idiosyncracy, and in these the drug had to be discontinued permanently.

6. In patients suffering from cerebral palsies, tridione exercised a favorable influence not only on the conduct but also on behavior and coordination, particularly in children.

Tridione apparently produced a better effect on cerebral palsies, *petit mal*, and psychomotor seizures than did the anticonvulsant medications which the patients had received previously. (Author's abstr.)

The Use of Ergotamine Compounds in the Treatment of Acute Simple Anxiety States.

A report is made on 59 cases of acute anxiety treated with ergotamine tartrate, 37 cases treated with ergonovine maleate and 36 cases treated as controls with

calcium lactate. Results are given therapeutically and it is indicated that, while these drugs do act as antisympathetic compounds and to some degree ameliorate symptoms of jitteriness and tension, their potential hazard and the routine required for their administration is sufficiently complex to limit their use to special instances. (Author's abstr.)

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Relation of Personality Problems to Onset and Progress of Multiple Sclerosis.

A number of patients with multiple sclerosis show signs of conversion hysteria either before or after the development of signs of organic disease. The 4 women whose cases are described in detail showed evidence of emotional immaturity at a preadolescent level. They were caught in an entangling neurotic relationship with the mother. There was a tendency to relate themselves to others in a passive way, which led to resentment and hostility. In choosing a husband, they sought a passive person whom they thought intellectually and socially inferior to themselves, in an apparent attempt to assume a dominating role. Sexual relations were never satisfactory. They showed the appearance or accentuation of organic symptoms at a time when the husband became more self assertive and capable.

These patients showed pronounced evidences of vasomotor instability in the extremities. The question arises whether vascular changes in the brain related to the neurotic difficulties could lead, in turn, to organic changes. Since the cause of multiple sclerosis has not been established, it can be thought of as a syndrome, and the data presented here do not necessarily apply in all cases. Psychotherapy offers as hopeful an approach as any other treatment which is now available, and may present one method of understanding these patients better.

(Author's abstr.)

Spatial Organization of Visual Perception Following Injury to the Brain.

Disorders in the spatial organization of visual perceptions were found in 12 patients with cerebral lesions in the parietal and occipital regions. In some of these patients (selected from a large series of patients with wounds of the brain incurred in battle) the disturbance was limited to homonymous quadrants of the visual fields and was most pronounced in circumscribed sectors of these quadrants. In these areas the patients were unable to localize (visually) any stationary (and sometimes moving) object in all three dimensions of space. Two patients showed such errors in localization, predominantly in the sagittal plane. Both showed varying amounts of teleopsia. With the teleopsia, there were concomitant changes in apparent size and brightness. The phenomena appeared with binocular vision as well as with monocular vision with either eye.

Direction and extent of apparent displacements of objects perceived in the involved regions of the field of vision were consistent and characteristic for each patient. On the other hand, the disturbances did not assume an all or none character. The apparent displacements were increased by prolongation of exposure, and they were minimized or abolished on tachistoscopic study. Under certain conditions a complete " reversal " of the abnormal depth effect could be observed, so that persistent teleopsia changed momentarily into " pelopsia " (or the illusion of abnormal nearness).

In order to get at the functional correlates of these alterations in space perception, a methodical sampling of perceptual and/or motor performances was undertaken. As a result of these tests, it is concluded that the alterations were not produced by a general reduction in " cognitive ability " or any similarly defined intellectual functions, but by systematic changes in function which had taken place in the most implicated quadrants or half-fields. The implicated quadrants and half-fields seemed " weakened " as compared with the less affected regions of the same field of vision or with corresponding areas in the fields of normal controls. It is pointed out that none of the usually accepted theories of space perception can explain why such generalized " weakening " should be associated with an apparent dropping back of perceived objects in space. Evidently, the patients behaved as though the subjective coordinates of their visual space had been permanently altered. It is submitted that such a change can be best described, even though not explained, in terms of a field theory of visual perception.

(Authors' abstr.)

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Electroencephalographic Findings in Measles Encephalitis.

By correlating the known pathologic changes with the known changes that occur in the electroencephalogram in measles encephalitis it seems reasonable to conclude that:

1. During the acute stages of the disease the severe dysrhythmia is due chiefly to the diffuse vascular reaction and the associated influence of toxins on the cortical ganglion cells. Most of these disturbances may subside without permanent damage.

2. The electroencephalographic changes found in the post-acute stages are largely due to subcortical demyelinization and axonal degeneration, with interruption of the fiber connections between the cerebral cortex and the diencephalon. In this connection the influence of the thalamus and the hypothalamus upon the cortical potentials, as demonstrated by Kennard and Nims, should be kept in mind.

3. The focal and lateralizing disturbances in the electroencephalogram tend to correspond to the clinical localizing signs. (Author's abstr.)

The Etiology of Multiple Sclerosis. A Short Review.

1. A brief survey of pertinent facts elicited in the investigation of etiologic factors in disseminated sclerosis has been attempted, with a view to correlating some of the more conflicting concepts.

2. The vascular occlusion theory may be related to that of vasoconstriction or spasm. The vulnerability of the white matter, and possibly of the sympathetic nervous system as a whole, to noxious factors of metabolic, infectious, or other irritative character has been emphasized.

3. The possibility of local allergy, as described by Ferraro and others, does not preclude the possibility of the above concepts, nor does the theory of virus etiology necessarily change the idea of the mechanism involved, although it is possible that the virus theory may hold only in limited cases.

4. It is emphasized that a careful study of the history and nature of the onset as well as of the remissions of the disease be made with the possibility in mind of further eliciting etiologic factors that may become of therapeutic and prognostic significance in the individual cases.

5. A series of careful laboratory studies has revealed somewhat inconstant findings, suggesting possible multiple factors of etiology. (Author's abstr.)

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Effect of Sodium Cyanide on the Human Electroencephalogram.

While testing the therapeutic value of cerebral anoxia in mental disease, sodium cyanide was administered intravenously in varying dosage to seven "healthy" schizophrenic patients. The following changes in the electroencephalogram were noted: Flattening with "attention" during the injection; followed 15–20 seconds later by a short burst of 6–10 per second waves; succeeded by high voltage slow waves and then by flattening. Recovery followed the reverse course of induction. The duration of unconsciousness corresponded closely to the duration of slowing and flattening of the electrical activity and varied directly with the dosage.

During induction with high doses immediate flattening occurred without preliminary slowing. Hence, when anoxia is abrupt and severe, flattening occurs without slowing.

The electroencephalogram obtained during extreme anoxia is difficult to distinguish from that obtained during attention.

CO_2 does not significantly increase the power of the cerebral nerve cells to resist intracellular anoxia. It follows as a corollary that, with low partial pressure of oxygen in the respired air, the antianoxic effect of carbon dioxide resides in its power to improve oxygen transport.

The electroencephalographic changes produced by cyanide are not qualitatively specific for this substance. They are the common outcome of all types of oxygen lack. They resemble the changes produced by depressant drugs, injury, etc. Differences in the electroencephalographic response to various stimuli may be determined by their time course alone. (Authors' abstr.)

Effects of P-Aminopropiophenone on Response-Times of a Conditioned Reflex of Avoidance.

Effects of p-aminopropiophenone (PAPP) on conditioned flexions of avoidance were observed in three dogs. With subcutaneous doses of between 5–10 mgm./K., as 1 per cent. solution in propylene glycol, PAPP tended to produce a lengthening of conditioned response-times. The duration of the lengthening effect tended to increase with the dose. It was independent of seriously toxic effects, and was independent of gross alterations in respiration. Complete blocking of conditioned flexions of avoidance after PAPP was frequent only in a susceptible dog which eventually succumbed.

The lengthening of the conditioned response-times after PAPP is presumably attributable to an anoxia of cortical tissue resulting from methemoglobinemia. An initial chemoreceptive reflex inhibition of the cortex is conceivable, however. (Author's abstr.)

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*The Diagnostic Implications of Rorschach's Test in Case Studies of Mental Defectives. *Jolles, I.* 89

The Diagnostic Implications of Rorschach's Test in Case Studies of Mental Defectives.

The author made a careful study of 66 children who, on the basis of psychometric examinations, were seriously retarded in their mental development. This study was based upon, not only the psychometric results, but also case history material and the Rorschach test. Rorschach findings were presented on all of the 66 cases in this study, and a few cases were selected for detailed analysis. The results of the Rorschach test imply that mental deficiency has as a necessary component emotional and personality maladjustment. On the basis of the findings of this study the following conclusions are reached :

1. Mental deficiency of the familial and undifferentiated types is, in many instances, a symptom of personality disorder, and it is unlikely that in such cases it represents a failure of the intellect to develop normally.

2. It is quite probable that many mental defectives may be treated successfully by psychotherapeutic techniques.

3. A study of the retarded child is not complete unless case history material and some projective technique is used to supplement the results of the psychometric examination.

4. It is necessary for educators to carry their responsibility further than merely providing a specialized educational programme for the retarded child. They must add to the curriculum a programme of case work with the family and other aspects of the defective's environment and also provide in the curriculum a psychological programme which will help the child meet his emotional needs satisfactorily. Until this is done our school systems will have failed in their responsibility to the retarded child.

5. It is urgent that other investigators continue with studies of this type in order that we may better understand the problem of the feeble-minded, for the results of this and other studies tend to indicate rather clearly that our present concept of mental deficiency may be based upon a set of false assumptions which are inadequate in dealing with the problem. (Author's abstr.)

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Convulsive Disorder and Personality.

1. The author has examined theories about epilepsy, seeking to account for the personalities developed by epileptic individuals. Implicit in most theories, except those the author termed the "stress" and "psychosomatic" theories, is an assumption that there is a typical and fixed "epileptic personality."

2. The experimental findings of various investigators vary but the weight of evidence is against the existence of a typical and fixed "epileptic personality" which characterizes all or even most epileptic patients. Studies of non-institu-

tionalized, non-deteriorated adult patients using projective personality tests are lacking.

3. The author has compared two groups of sick adults, epileptics and diabetics, on a battery of psychological tests. Significant or near-significant differences emerge in mean Wechsler-Bellevue performance IQ (diabetics are higher), in average time per response on the Rorschach (epileptics are slower), and in average number of "neurotic signs" on the Rorschach (epileptics show more "neurotic signs"). The epileptic group shows on the Rorschach more emotional strain and less acceptance of self than does the diabetic group. Among the author's epileptic subjects, nearly all of whom developed epilepsy in adolescence or adulthood, there is a clear trend toward greater maladjustment with shorter duration of illness.

4. On the whole, however, the groups show far more similarity than difference. Both groups show on the Rorschach drive for achievement but limited productivity, tendencies to constriction and withdrawal, and conflict in their tendencies to be outgoing and to withdraw.

5. Generalizations are of necessity limited because of the small number of cases. Their data, as far as they go, do indicate that there is no typical personality picture which characterizes the epileptic group and distinguishes it from other sick or neurotic groups. (Author's abstr.)

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Problem Solution by Monkeys Following Bilateral Removal of the Prefrontal Areas. VI. Performance on Tests Requiring Contradictory Reactions to Similar and Identical Stimuli.

(1) A series of tests was designed to compare the performance of five normal and five prefrontal monkeys on problems involving contradictory reactions to similar or identical stimuli.

(2) The tests differentiated clearly between the two groups of animals. The performance of the prefontal animals was consistently and significantly inferior to that of the normal group. Error scores averaged for blocks of 30 or 40 tests for each animal showed no overlap between the groups. The best score of each operated animal was in each instance poorer than the poorest comparable score of any normal animal. Evidence was presented to show that the operated animals were well motivated.

(3) Two of the operated animals in this series were previously compared with normal monkeys in delayed reaction studies, and were found to perform as well as some normal animals.

(4) Statistical manipulation showed that it was possible to assign the occurrence of some of the wrong choices to the persistence of erroneous choice-response patterns in both groups of animals. There were no significant differences between the two groups in test series B and C, but the earlier series A showed a virtual absence of the tendency in normal animals as contrasted with a strongly manifested tendency in the operated group. The erroneous choice-response tendencies sometimes persisted for as long as 100 trials on the same test.

(5) The inferior performance of the operated animals was interpreted as resulting largely from perseverative interference, i.e. from impairment of the ability to relinquish previously acquired, interfering reaction patterns.

(6) It was suggested that performance of human and animals Ss with injury to the prefontal areas may profitably be re-evaluated in terms of the hypothesis of perseverative interference. (Authors' abstr.)

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The Effects of Mild Anoxia on Simple Psychomotor and Mental Skills.

An investigation of the effects of mild anoxia on three simple psychomotor and mental skills has been conducted. The skills studied were finger dexterity, arm-hand coordination and simple addition.

Two hundred and forty-four Army Air Corps Cadets served as Ss. Each S participated in only one experiment. They were divided into sub-groups equal in initial level of performance on the skill in question. The experimental sub-group in each case was subjected to mild anoxia, while the control sub-group was tested always under normal oxygen conditions. The mild anoxia was induced by reducing the barometric pressure in a high-altitude chamber of the variety used throughout the war by the Army Air Forces. Time under anoxia was held constant at 35 minutes, since the study was concerned with the short-duration effects of the anoxic conditions.

The results justify three conclusions: (1) A decrement in level of performance appeared immediately after the introduction of mild anoxia. (2) Following an initial decrement in level of performance rapid adjustment occurred as the time under mild anoxia increased. (3) In addition to the adjustment process there occurred improvement with continued practice under the anoxic conditions.

(Author's abstr.)

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The Differential Effect of Prolonged Mild Anoxia on Sensory and Sensory-motor Reactions and on such Subjective States as Sleepiness, Irritability and Boredom.

At intervals during an eight-hour exposure to an altitude of 10,000 ft. (simulated in a nitrogen dilution chamber), and also during a control run, 16 male college students were given tests of visual, auditory, and sensory-motor efficiency and were asked to rate themselves on 10 subjective conditions, including sleepiness, irritability, and boredom.

The detailed results for three of these measures, previously reported in separate journals, are here summarized, together with some new material, and the differential reactions to prolonged mild anoxia are discussed. The principal findings were :

(1) A progressive and statistically significant increase in the size of the peripheral blind areas of the eye throughout the run. This anoxic effect on the angioscotomata was augmented by a hearty protein lunch.

(2) A progressive and statistically significant increase in sleepiness, feeling of fatigue, boredom, wandering of attention, irritability, headache, and depression, and a corresponding decrease in motivation, coordination, and general feeling of well-being. These maladaptive reactions reached their maximum after 6·25 hours, but were somewhat reduced by an end-spurt after 7·25 hours, when the subjects became aware that their ordeal was almost over.

(3) An appreciable loss of auditory efficiency after 2 to 5 hours when the subjects were tested for their ability to perceive the sounds most frequent in common speech, by methods and materials employed in an earlier study involving a brief exposure at higher altitudes. However, an end-spurt was evident in this test also, suggesting that the poor performance at this moderate altitude was due more to a wandering of attention than to any genuine auditory defect. (In the earlier tests at higher altitude, a significant loss in the ability to perceive speech sounds occurred at altitudes as low as 16,900 ft.)

(4) No loss of efficiency on such a simple test of eye-hand coordination as the Minnesota Block Test, in contrast to the other positive findings.

As judged by the magnitude, persistence, and statistical significance of the changes at altitude, and by the relative imperviousness to subjective compensatory effort (the absence of an end-spurt), the angioscotoma test appears to be the most sensitive indicator of the encroachments of prolonged mild anoxia on the subjects' efficiency.

Taken as a whole, the results indicate a moderate but progressive loss of efficiency and a generally poorer emotional adjustment as the exposure to the relatively low altitude is prolonged. (Author's abstr.)

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EEG Changes Induced by Water Intoxication.

Water intoxication gave rise to low frequency activity in the EEG in nearly all the subjects studied in this series. The bioelectric charges observed are similar to those produced by insulin-induced hypoglycemia and oxygen poisoning.

The pitressin water test is not a specific test for epilepsy.

Water intoxication, in common with hypoglycemia and oxygen metabolism collapse, is probably a phenomenon of intraneuronal dysfunction.

In certain epileptics a positive water balance apparently disturbs already poorly functioning neurones, as determined by the EEG low frequency activity, and thereby acts as the detonating mechanism for the convulsive discharge.

The absence of abnormal brain electric activity in water intoxication does not indicate that the observed patient does not suffer from clinical epilepsy. As a diagnostic test for epilepsy in the type of patient herein reported, pitressin hydration is of limited value. (Authors' abstr.)

Study of Carbonic Anhydrase in 37 Brains with Reference to Symmetry of Distribution.

Data are given from the examination of 37 brains in which a total of 138 comparisons of carbonic anhydrase content from the same areas in the right and left

hemispheres were made. These would seem to indicate focal irregularity of quantitative distribution of that enzyme in diffuse organic brain disease and in the presence of a chronic pathogenic stress capable of affecting the brain. This degree of irregularity was not found in the absence of such organic compounds. (Authors' abstr.)

DECEMBER.

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Serial EEG's in Brain Injury.

There is a definite effect of time on serial EEG findings following cerebral trauma. Percentage of EEG improvement increases as time lapses after injury. The wider the cranial injury, the greater the likelihood of eventual EEG normality. " Amplitude asymmetry " is a valuable indicator and localizer of cerebral trauma. (Authors' abstr.)

Three Types of Thinking Disorder.

The behavior of selected groups of schizophrenics, general paretics and cerebra arteriosclerotics on sorting tests which utilized words and numbers as manipulative objects, indicated that the three diagnostic categories tended to be behaviorably distinct from one another in a statistically significant manner.

These differences were demonstrable in terms of the patients' performance and their explanation of that performance. The schizophrenics were found to perform generally in an operationally defined " co-ordinated " manner, and to offer an explanation for their performance. General paretics tended to perform in an operationally defined " unco-ordinated " manner, and to offer no explanation for their performance. Cerebral artieriosclerotics tended to perform in an " unco-ordinated " manner that was statistically no different from that of the general paretics, but excused or apologized for their performance.

Schizophrenics and cerebral arteriosclerotics performed generally in a significantly different manner, but were alike in that they both tended to display some critical evaluation of their behavior.

The thinking disorder of the paretic is interpreted as both a deficit in performance potentialities and in organization. The thinking disorder of the cerebral arteriosclerotic is interpreted as a deficit in performance potentialities ; the factor of intellectual organization is essentially unimpaired. The schizophrenic shows no deficit in performance potentialities. His disorder is interpreted as one of organization which appears as a non-correspondence between performance and explanation of performance. (Author's abstr.)

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The EEG Patterns in Experimental Epilepsy.

In monkeys in which chronic recurrent epilepsy has been produced by the application of alumina cream to the motor cortex of one side of the brain, the following typical EEG patterns have been presented :

(*a*) unilateral focus, consisting of irregular random and serial show activity, spike potentials and variants of spike and dome formations ;

(*b*) bilateral abnormalities, showing the above features on both sides of the brain.

It has also been demonstrated that subconvulsive doses of metrazol increased the focal discharges where the abnormality was minimal or moderate, but did not appreciably influence abnormalities which were already marked.

(Authors' abstr.)

MARCH.

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The Significance of Abnormal Electroencephalograms Prior to Electroconvulsive Therapy.

(1) Fifty-six patients all showing abnormal electro-encephalograms were treated with electro-convulsive therapy.

(2) The electro-encephalograms did not retain the marked slow wave activity characteristically observed following electro-convulsive therapy for periods significantly longer than in patients with normal pre-treatment electro-encephalograms, with 6 exceptions.

(3) Two patients developed spontaneous convulsions, which persisted in one of the patients for a long period of time.

(4) Four patients with a history of epileptiform seizures maintained on anti-convulsant medication during treatment showed no tendency to increased seizures.

(5) Patients with signs of arteriosclerosis showed more marked and more prolonged amnesia and confusion than did the remainder of the group, regardless of the character of their electro-encephalograms.

(6) Electro-encephalographic abnormalities of whatever degree do not by themselves constitute a contraindication to electro-convulsive therapy except where a focal or expanding lesion is suspected. (Authors' abstr.)

Heredity as a Factor in Homosexuality.

The application of Goldschmidt's developmental theory, derived from his study of gynandromorphs, gives no evidence in this study of an hereditary etiologic determination of homosexuality in human beings.

Individuals who continued passive sodomy beyond the age of 25 had a greater than expected number of female siblings.

There was a significant deviation from expectance among the siblings of passive penile fellators under the age of 25, with a predominance of male siblings. This deviation was not found in the group of older passive penile fellators.

APRIL.

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Cerebral Localization of Psychological Processes Occurring during a Two-minute Experience. *Ingham, S. D.* 388

The Basic Pathology of Schizophrenia.

(1) Many persons who appear superficially to be psychoneurotics in early life but show a paranoid personality trait develop into cases of true schizophrenia.

(2) Many persons who show true schizophrenia in later life have the elements of the diagnosis in their personality make-up years before the reactive psychosis develops. It is concluded that they have schizophrenia before the psychosis develops.

(3) Females who later develop schizophrenia commonly have subnormal menstrual function, perhaps even actual amenorrhea sometimes for years before a schizophrenic psychosis develops. They, in common with the males, show a persistent juvenility with inadequacy in the sexual sphere with lack of interest, dyspareunia or maternal inadequacy and emotional instability.

(4) The males show persistent juvenility in sexual as well as in general behavior. They also show outbursts of negativism or violent anger with control of such behavior if they find it necessary to exert the control. Thus they respond to discipline and such response differentiates them from psychopaths.

(5) All groups of apsychotic dementia praecox show intellectual-emotional dissociation, a true splitting of the personality. There is no actual cortical disturbance until possibly very late in the disease. The fundamental pathology must be in the diencephalon, a specific defect, not a gross lesion in the usual sense.

(Author's abstr.)

Studies in Electronarcosis Therapy.

(1) A study of the 17-ketosteroid excretion of a group of psychotic and psychoneurotic patients did not reveal a significant decrease or increase in daily excretion as compared to normals, nor is the rate of excretion significantly different during or after electroshock or electronarcosis therapy; nor was it confirmed that the sleep/waking excretion of 17-ketosteroids was lower in psychotic patients than in normals.

(2) Electroshock initiates a hyperglycemia which reaches a peak of 25 mgm. per cent. above pre-treatment levels 20 minutes after current is applied in *grand mal* reactions, and of 7 mgm. per cent. above pre-treatment levels 10 minutes after current is applied in *petit mal* reactions. In the electronarcosis-treated patients a 52 mgm. per cent. increase occurs 20 minutes after application of current. It is postulated that this may be evidence of sympathico-adrenal stimulation, most intense in electronarcosis, less so in *grand mal* electroshock therapy and least evident in *petit mal* electroshock reactions.

(3) There is no significant change in the blood cholesterol level in either *grand mal* or *petit mal* reactions resulting from electroshock or in electronarcosis.

(Authors' abstr.)

Studies in Electronarcosis Therapy.

In summary of the findings on intellectual functions, we may say: (1) the patients selected for electronarcosis therapy cover the usual range of intelligence, and do not differ from other clinical groups; (2) some of the patients show psychomotor retardation which is found to be associated with relatively good prognosis; (3) the therapy produces no marked changes in intellectual functioning.

Data on the Multiphasic may be summarized as follows: (1) the patients selected for electronarcosis show scores on the Multiphasic similar to those of other psychotic groups, and they resemble most closely those who respond to electroschock or insulin therapy; (2) patients responding best to electronarcosis tend to have high scores only on the Depression scale; and (3) within the electronarcosis group, the majority of those responding well can be identified, and with somewhat more assurance, more than half of those who respond poorly can be identified without doing injustice to any cases who are marked much improved or recovered after therapy.

The most important theoretical implication of the psychological findings with respect to intellectual functions and personality is that the patients who respond best to this kind of therapy are those who are depressed and show psychomotor retardation. Patients with other kinds of intellectual impairment and with attitudes of social and emotional alienation, ideas of unreality and other psychotic symptoms respond relatively poorly. A secondary implication of the findings, suggested by the similarity of the criteria for poor response to the convulsive therapies (psychotics) and to psychotherapy (neurotics), is that the *Multiphasic* can identify relatively unmodifiable aspects of mental disorder, and that these aspects cut across the traditional separation of the psychoses from the neuroses.

(Authors' abstr.)

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MAY.

Bilateral Fractional Resection of Frontal Cortex for the Treatment of Psychoses.

(1) Bilateral circumscribed extirpation of frontal cortex was done on four psychotic patients. Two made a social recovery. Of the other two, who were deteriorated schizophrenics, one improved sufficiently to be at home under supervision and the other improved only temporarily.

(2) Complications frequently seen following lobotomy did not occur in this series.

(3) This is the first report of bilateral removal of cortical tissue in brains without gross cellular pathology. There were no deleterious effects on behavior.

(4) A more extensive report on a larger series of psychotic patients with circumscribed bilateral cortical ablation will be made shortly. (Authors' abstr.)

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*A Second Motor Cortex in the Monkey. *Sugar, O., et al.* 182
*Kernicterus. *Becker, P. F., et al.* 190
*Histometabolic Change and Neuropathologic Selectivity in the Light of Recent Investigations. *Roizin, L.* 216

Carcinomas of the Tongue in Monkeys with Pathological Changes in the Central Nervous System.

The histopathology of the central nervous system of two cases of carcinoma of the tongue in rhesus monkeys is described.

While the carcinoma in the first monkey was spontaneous in origin, the carcinoma in the second monkey was produced by an injection of an emulsion of the carcinomatous tissue from the first monkey into the tongue of the second.

Motor nuclei of the brain stem and the anterior horns of all spinal cord segments were affected. The lesions were characterized by intracytoplasmic vacuoles frequently containing a small, roundish body and by other severe cell changes.

In order to explain the limited distribution of the lesions in the brain stem and spinal cord, Galkin's experiments have been cited. They demonstrate direct connections between the lymphatic system of the pharynx and the subarachnoid spaces. It is assumed that the etiological factor responsible for the damage of the neurons (carcinoma toxin ? virus ?) invaded the central nervous system via such lymphatics. (Authors' abstr.)

Subcortical Changes in Cerebral Concussion.

(1) Subcortical areas, hypothalamus, nucleus ruber, and cerebellum show in the electroencephalogram quite similar disturbances as those observed on the cerebral cortex, and in some cases the disturbances of these areas may be more intense than in the cerebral cortex. Withdrawal of cerebrospinal fluid preceding the concussion does not prevent the development of these changes of electrical activity.

(2) Following cerebral concussion there may develop, in some instances, edema of the subependymal zone around the aqueduct in the subacute stage and proliferation of the subependymal glia fibers around the third ventricle in the chronic stage. (Authors' abstr.)

A Second Motor Cortex in the Monkey (Macaca mullata).

A second motor cortex has been described in the monkey, lying on the lateral (exposed) and medial (buried) walls of the fronto-parietal operculum and the posterior portion of the insula.

The arrangement of body-parts in this area is roughly that of the arrangement in the second sensory cortex which lies posteriorly, overlapping the motor cortex; the face region is anterior-superior and comes onto the lateral hemispheric surface; the foot region is posterior-inferior, adjacent to the supratemporal plane; the hand region, by far the largest, lies between the others. The movements obtained with 4/second stimulation are individual isolated ones; those from the distal portions of the body are much more readily obtained than those from the proximal portions. In all cases, the movements were contralateral to the area stimulated.

Stimulation of the anterior half of the insula caused respiratory slowing and

arrest in expiration. Movements of the vocal cords were obtained from the operculum anterior to the inferior precentral dimple. Eye movements were obtained in two monkeys from the anterior-superior portion of the insula near the infrafrontal plane.

Stimulation of the posterior third of the superior (buried) surface of the middle temporal gyrus produced ipsilateral twitches of the pinna; stronger stimulation caused spread to other muscles innervated by the facial nerve.

(Authors' abstr.)

Kernicterus.

Seven cases of kernicterus are described. They were all associated with erythroblastosis fetalis. This condition was confirmed in the authors' cases by means of serologic and histologic studies. In five cases the infants were Rh positive and the mother Rh negative with anti-Rh agglutinins. In one case the erythroblastosis was presumably due to the A factor and in another case the erythroblastosis was due to the Rh factor.

Slow movements of the extremities, suggestive of choreoathetoid movements were recorded. In five cases, jaundice appeared during the first day of life; postmortem studies disclosed the discoloration to be present most frequently in the following structures: hippocampus, basal ganglia, midbrain, medulla and floor of the fourth ventricle. The microscopic findings, except for the sixth and seventh cases, were uniform. In regions grossly bile-stained the nerve cells were shrunken and stained readily with eosin, some containing dark staining nuclei. Some nerve cells displayed poorly stained cytoplasm and vacuolization. These alterations are not improbably the result of venostasis. No alterations of the glia cells, microglia, or connective tissues were detected.

In two cases, there was yellow pigment present in scattered nerve cells in the hippocampus, basal ganglia, pons, cerebellum (Purkinje cells) and medulla oblongata (olives).

Perivascular aggregations of undifferentiated neuro-epithelial cells were found scattered in their usual distribution. Extramedullary erythropoiesis, chiefly in the liver and spleen and visceral hemorrhages were other anatomical findings.

(Authors' abstr.)

Histometabolic Changes and Neuropathologic Selectivity in the Light of Recent Investigations.

An attempt has been made to emphasize the correlation between the morphologic and histometabolic organization of the nerve cells, to demonstrate the interaction between histometabolic components of the nerve cells and various endogenous and exogenous processes and to trace the interrelationship between various histometabolic disorders (histometabolic dysergia) and certain neuropathologic conditions.

Attention was drawn to the fact that cell activities in physiologic conditions are in a state of structural as well as functional balance (integrated structure-function synergism). This anatomo-functional unit is not acting as an individual particle but acts through various neural, vegetative, and hormonal reflexes, as an integrating part of the entire system. If this mechanism is disturbed by one or several of the factors which may be structural or functional in nature, a state of histometabolic dysergia may take place.

It was stressed that histometabolic dysergia is not sufficient in itself to bring about a pathologic disorder but represents a potentially reversible condition of predisposition or sensitization to vulnerability which, if aggravated by additional endogenous or exogenous precipitating factors, may react along certain functional or structural patterns, thus leading the way to a more or less permanent pathologic disturbance of the involved system.

Although it is necessary to realize that there is probably in each case an interplay of several factors, it seems reasonable to believe that histometabolic dysergia may play a very important pathogenic role in determining patterns of reaction and neuropathologic selectivity in various neurologic and psychiatric conditions.

(Author's abstr.)

J. NEUROPHYSIOL.
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*The Occipital Alpha Rhythm. *Cohn, R.* 31
*Some Respiratory, Vascular and Thermal Responses to Stimulation of Orbital Surface of Frontal Lobe. *Delgado, J. M. R., and Livingston, R. B.* 39

Total and Free Acetylcholine in Rat Peripheral Nerves.

1. Minced rat spinal nerves synthesize ACh *in vitro*.

2. A variable amount of ACh is synthesized during the determinations of free/total ACh ratios of rat spinal nerves. This synthesis is probably nearly complete within the first few minutes of the extraction procedure.

3. The ACh content of rat spinal nerves is variable. In a series of eleven experiments it averaged about 6 μg./g.

4. The ACh in normal rat spinal nerves is about 70 per cent. water-extractable. The free/total ACh ratio is constant within experimental error.

5. The ACh in the nerves of rats acutely poisoned with DDT or paralyzed by spinal transection or cold block is almost entirely water-extractable. The total ACh content of the nerves shows no change. (Authors' abstr.)

Absence of Spinal Cord Regeneration in the Cat.

No evidence was obtained of any regenerative power from the upper or lower ends of transected spinal cords in cats. A note of warning can be sounded on the basis of a fortuitous section which might have been interpreted as representing regeneration save for the persistence of a ganglion cell in the midst of the fibers in question. (Authors' abstr.)

The Cingular Gyrus: Area 24.

1. Electrical stimulation of area 24 causes respiratory, cardio-vascular and pupillary responses as well as piloerection. It also causes profound suppression of all motor activity, abolition of the deep reflexes and suppression of the electrical activity of the cerebral cortex. It may evoke complex bilateral tonic movements.

2. Marchi degeneration extends from area 24 through the cerebral peduncles to the medial reticular formation of the pons.

3. Ablation of area 24 causes a loss of fear of man, social indifference to fellow monkeys and loss of mimetic activity, grooming and signs of affection.

(Author's abstr.)

Phasic Inhibition of the Light Reflex of the Pupil During Retinal Rivalry.

The pupillary reactions to short foveal flashes of constant intensity striking one eye were observed during retinal rivalry in normal subjects. A flash of suitable intensity, arriving during the phase of dominance of the stimulated fovea was shown to have a greater chance of eliciting a pupillary contraction than one arriving during suppression of the fovea. This shows that during rivalry a phasic inhibition possibly as far down as the level of the retinae takes place. The similarity with the retinal inhibition in cases of squint, previously demonstrated by other investigators, is pointed out. (Authors' abstr.)

The Occipital Alpha Rhythm. A Study of Phase Variations.

1. The pericalcarine cortex forms four functional oscillators of potential difference.

2. The potential fields (or dipoles) of the oscillators are oriented with maximum negativity around the calcarine fissure.

3. Thus certain out-of-phase electric activity may be observed as a result of the orientation of the potential fields.

4. Other apparent out-of-phase activity is the result of variations in frequency of the generators of potential difference.

5. The frequency regulation of any pericalcarine oscillator is not generally constant, but fluctuates around a mean value.

6. Precision methods are presented for the recording and observation of phase relations of the potential waves derived from the human brain.

(Author's abstr.)

Some Respiratory, Vascular and Thermal Responses to Stimulation of Orbital Surface of Frontal Lobe.

1. Electrical stimulation of the orbital surface of the frontal lobe in the dog and monkey results in certain blood pressure, respiratory and thermal responses.

2. An almost instantaneous fall in blood pressure (8–10 mm. Hg) resembling vagal effect may occur on stimulation of the orbital surface. Or there may be a slow rise occurring after a delay of 5–10 seconds and lasting about 30 seconds. In the monkey respiration can be arrested at any phase of the respiratory cycle by stimulation of active cortical areas in the region of the posterior orbital gyrus. In the dog respiration can be inhibited, but without complete arrest, by excitation of the lateral olfactory gyrus. Blood pressure and respiratory effects have slightly different thresholds and each can be obtained independently.

3. Mechanical, thermal and electrical excitation of the cortex of the orbital surface may result in a rapid rise of 6–8° F. in temperature of the extremities.

4. After bilateral chronic ablation of the posterior orbital gyrus in the monkey, temperatures of the extremities are markedly elevated and show less pronounced and less prolonged reaction to cold environment.

5. The frontal lobe has much cortex hidden within depths of sulci. Certain cortical areas in the sulcus principalis of the monkey and sulcus presylvius of the dog closely approach the cortex of the orbital surface and appear to have related function.

6. Changes in frequency and intensity of stimulation in the same cortical point are capable of bringing about different effects and may serve as a means of distinguishing different functional components of a single region.

(Authors' abstr.)

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*Effect of Nicotine on Spinal Synaptic Conduction and on Polarization of Spinal Cord. *van Harreveld, A., and Feigen, G. A.* 141

The Electroencephalogram in Experimental Concussion and Related Conditions.

(1) Concussion produced by a blow on the head, or an impact to a plunger in a saline-filled tube leading to the intracranial activity, was accompanied by changes in the EEG which were similar to each other and to those produced by instantaneous or fairly rapid rises of intracranial pressure.

(2) Such changes produced in the EEG were reversible.

(3) Changes in the EEG with concussion were not specific for concussion.

(4) Of the slow waves produced in the EEG in these experiments, some were synchronous with the heart rate and peaked at the time of the T-wave of the EKG. The basis of these waves was not determined.

(5) The EEG of animals receiving about the body simulated blast impacts of lethal character was not that of concussion. (Authors' abstr.)

Observations on Sensory Paralysis Produced by Compression of a Human Limb.

As a result of study of the sensory changes following the application of pressure to the intact human arm, Lewis, Pickering and Rothschild put forward the view that " sensory nerve fibres become more sensitive to ischaemia as they are traced back from their endings towards the central nervous system."

This work has been repeated, using a more critical technique, and it has been found that the generalizations upon which the theory is based do not survive a close examination. It is possible, however, to explain all the experimental observations in terms of currently accepted physiological principles, by a consideration of some of the anatomical factors involved in compression of the upper limb.

In the course of the investigation it was found that the mechanism of the sensation of touch aroused from the skin appears to be more susceptible to the effects produced by compression of the limb than that aroused from hairs. It is possible that the sensory endings may have some influence in modifying the manner in which the various sensory modalities are lost in compression experiments.

(Author's abstr.)

Observations on Electrical Stimulation of Pain Fibres in an Exposed Human Sensory Nerve.

Condenser shocks were applied to an isolated human digital nerve in which, following the injection of a local anaesthetic into the region, only a few fibres appeared to respond to stimuli. The only sensation which could be produced was that of pain which was felt after a delay of 1·25 seconds following the application of the stimulus. It is suggested that at least part of this delay is due to central and not peripheral factors.

The voltage threshold necessary to elicit pain was determined for a number of condenser discharges of different time-constants. The values so obtained are in satisfactory agreement with the theoretical voltage condenser time-constant curve of Hill, the time-constant " k " being about 6·5 milli-seconds.

The possibilities that one condenser shock gives rise to repetitive impulses in the nerve, and that pain is due to the temporal summation of impulses which singly would not cause pain, have been discussed, and rejected. (Authors' abstr.)

An Anatomical Basis for Alterations in Quality of Pain Sensibility.

Biopsies were taken, after sensory testing of the areas concerned, from a series of patients with either cutaneous scars or areas of partially denervated skin. It was found that in every case where pain of an unpleasant quality could be elicited by means of a needle-prick, the underlying nerve nets and terminals subserving pain were isolated from their neighbours. Conversely, in no case where this isolation was not found microscopically could pain of unpleasant quality be produced. It was also found that alterations in the quality of pain sensibility were not correlated with the presence of morphologically abnormal pain endings. Such endings were, however, associated with disturbances of the threshold of pain sensibility.

Further evidence concerning the association of pain of unpleasant quality with a reduction in the normal peripheral pattern of innervation was obtained from a number of compression experiments on the normal arm. It is considered that this association is a significant one, and that the occurrence of " over-reaction " to painful stimuli in various clinical conditions is caused by a reduction in the normal pattern of impulses presented to consciousness. The suggestions put forward by previous workers have been discussed in the light of this hypothesis.

(Authors' abstr.)

Site of Action of Acetylcholine.

1. Giant axons of squid were exposed to trimethylamine in 0·02 M and to acetylcholine in 0·1 M. concentration, both labelled with N^{15}. After exposure, the axoplasm was extruded and the N^{15} concentration determined.

2. It was found that the tertiary base, trimethylamine, penetrates into the interior. After 25 minutes' exposure, 7·1 micromoles N were found per gram of axoplasm or 39·5 per cent. of the external concentration. After one hour, the concentration was 15·9 micromoles N per gram as compared with 20 micromoles N per c.c. outside.

3. In contrast, acetylcholine did not penetrate into the interior. In spite of an outside concentration of acetylcholine amounting to 1430 μg. N per c.c., only 86 μg. N were found inside or 0·67 per cent. of the N outside. But even this negligible amount must be attributed to the impurities of non-quaternary N in the acetylcholine which were found to be 55 μg. N per c.c.

4. The experiments demonstrate conclusively why the pharmacological effect of acetylcholine is limited to the synapse in contrast to the well-established physiological rôle of the ester in the surface membrane during conduction of nerve and muscle fibers. (Authors' abstr.)

Retinal-nerve Interval in the Grasshopper.

Stimulation of the eye of grasshoppers (*Melanoplus differentialis*) results in electrical responses in the visual system that can be recorded in the following order: (i) the retinal action potential, and (ii) a slow negative variation on the surface of the nerve between the optic ganglion and the brain. The latency of these responses, measured from the beginning of the light stimulus, increases as the stimulating intensity decreases. This relationship is such that the time interval between the beginning of the retinal response and the beginning of the optic nerve response, called the retinal-nerve interval, also increases as the intensity of stimulation decreases. This regular increase in the retinal-nerve interval is correlated with a reduction in magnitude of the retinal action potential and an increasing delay in the time of the occurrence of the peak of this action potential. This progressive increase in the retinal-nerve interval supports the hypothesis that the retinal action potential is the process or a sign of the process which is responsible for the activation of nervous elements in the optic pathway. (Authors' abstr.)

Effect of Di-isopropyl Fluorphosphate (DFP) on Action Potential and Cholinesterase of Nerve.

The stellar nerves (giant axons) of squid were exposed to two anticholinesterases, DFP and eserine. The concentration of these compounds in the axoplasm at the time of abolition of conduction was determined.

1. On exposure of the nerves to DFP in two concentrations, 2·2 and 5·5 × 10^{-3} M, the inside concentration was found to be less than 0·5 per cent. of that on the outside. The order of magnitude of the concentration in the axoplasm was 10^{-5} to 10^{-6} M. It varied in four cases from 1·3 to 8·4 × 10^{-6} M, in the fifth being 3 × 10^{-5} M.

2. Upon exposing the nerves to eserine in concentrations varying from 2 × 10^{-2} to 1 × 10^{-3} M, the inside concentration was much higher than in the case of DFP at the time when the action potential had disappeared. When the eserine concentration outside was 1 × 10^{-3} M, that in the axoplasm was about the same. With higher outside concentrations, the eserine inside increased slightly, but not proportionally.

3. The experiments show that the concentration of a compound applied externally to a nerve fiber does not indicate the concentration at the site of action. Some of the many factors determining the effectiveness of a compound applied externally are discussed.

4. Recent claims that conduction is possible in complete absence of cholinesterase activity have been re-examined. It was found that the data stem from use of inadequate technique. (Authors' abstr.)

Calibre Spectra of Motor and Sensory Nerve Fibres to Flexor and Extensor Muscles.

The tibialis anticus muscle and the gastrocnemius muscle in cats were de-afferented or de-efferented and the number and size of motor and sensory myelinated nerve fibres to the muscles studied separately, using a histological method described by Rexed.

No differences in fibre size were noticed between extensor and flexor. The motor nerve fibres ranged from 2 to 17 microns, and were collected in two groups from 2 to 7 microns and 7 to 17 microns respectively. The peak of the small-sized group lay at 4–5 microns, and that of the large-sized group at 11–13 microns. The sensory nerve fibres ranged from 1 to 17 microns and were collected in three groups from 1 to 4 microns, 4 to 10 microns and 10 to 17 microns respectively. The peaks of these groups lay in the small-sized group at 2–3 microns, in the medium-sized group at 6–8 microns and in the large-sized group at 12–13 microns. Shrinkage was not corrected for.

The number of sensory fibres corresponded to half of all nerve fibres in the flexor nerve, but only to a third of all fibres in the extensor nerve. The flexor nerve thus had a relatively larger number of sensory fibres—chiefly small fibres—than the extensor nerve. A similar difference between flexor and extensor motor fibres was less definite. (Authors' abstr.)

Effect of Nicotine on Spinal Synaptic Conduction and on Polarization of Spinal Cord.

1. Nicotine in small doses (5 mgm./kgm. body weight) suppresses the knee-jerk by central action.

2. The flexion reflex is suppressed by larger doses of nicotine (about 20 mgm./kgm. body weight). This is due to the peripheral curare-like action of nicotine.

3. The monosynaptic spike of the reflex action potential is depressed or abolished by nicotine in small doses (5 mgm./kgm. body weight), but reappears after the administration of large amounts of the drug (100 to 200 mgm./kgm. body weight).

4. The multisynaptic activity is much less affected by nicotine. The changes are qualitatively similar to those of the knee-jerk.

5. Since synaptic conduction in multisynaptic pathways of the spinal cord is hardly suppressed by nicotine, and since the monosynaptic spike, during its depression by small and moderate doses of nicotine, can be restored by appropriate facilitating procedures, it is concluded that nicotine does not interfere with the essential processes of synaptic conduction in the spinal cord.

(Authors' abstr.)

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The EEG in Curarized Mammals.

Evidence for the depression of inter-neural excitability by curare in the mammal is discussed. Data are offered to support the view that the spontaneous resting potentials, of which the EEG is an indicator, remains undisturbed in curarized mammal from rat to monkey. Evidence suggesting the contrary is analysed in terms of possible artefacts arising from types of anaesthesia, dosage of curare and inadequate respiration. (Author's abstr.)

Corticospinal Connections of the Superior Surface of the Temporal Operculum in the Monkey.

The method of physiological neuronography has been applied to the study of the connections of the supratemporal (s.-t.p.) plane of the monkey. The acoustic receptive cortex, lying on the s.-t.p. behind the inferior extremity of the central sulcus, has strong projections to the upper part of the frontal eye field (area 8), the fronto-parietal "face" area (6*b*, 44, 43, 1) and the visual association areas (18 and 19), as well as to other portions of the temporal lobe (areas 21, 22 and 37). It has connections by way of the corpus callosum (posterior fourth) with the homologous cortex of the opposite side.

The extra-auditory region of the s.-t.p. lacks the extensive afferent connections of the auditory cortex ; it fires the neighbouring regions and is connected with its homologue of the opposite side by tracts which traverse the anterior portion of the middle of the corpus callosum.

Other connections of the supratemporal plane with areas in the frontal, opercular, prearcuate and parietal regions are also described. (Authors' abstr.)

Cortico-cortical Connection of the Superior Bank of the Sylvian Fissure in the Monkey.

By local strychninization and recording induced activity, the connections to and from the infraparietal and infrafrontal planes (i.-p.p. and i.-f.p.) and other cortical areas have been mapped in the macaque monkey. These studies, in agreement with cytoarchitectonic studies and the results of stimulation, indicate a fundamental difference between the i.-p.p. and the i.-f.p. ; the dividing line between these two areas probably lies at about the level of the anterior subcentral dimple.

The i.-p.p. corresponds to the second sensory receptive zone of Adrian and of Woolsey. It has afferent and efferent connections with the pre- and post-central convolutions bilaterally. The connections are stronger with the first sensory cortex than with the first motor cortex. In general, the posterior portion of the i.-p.p. is connected with the leg and shoulder regions of the sensorimotor cortex and the anterior portion with the thumb and face regions. There was firing into isolated regions of areas 6 and 8 from restricted zones of the i.-p.p. Extensive connections were found between the i.-p.p. and the parietal operculum.

The i.-f.p. has no connections with the sensorimotor cortex with the possible exception of the face regions, but does project to isolated portions of area 6 and to the frontal operculum on the convexity of the hemisphere.

The i.-f.p. and i.-p.p. are each connected across from one hemisphere to the other homeotopically. There were no projections from the i.-f.p. of one side to the i.-p.p. on the opposite side, whereas region c of the i.-p.p. fired the contralateral i.-f.p. (region e).

The connections of the i.-p.p. and i.-f.p. with the sensorimotor cortex give a somatotopic arrangement which agrees well with that found by Woolsey and others using the method of evoked potentials from cutaneous stimulation.
(Authors' abstr.)

The Babinski Sign.

The extinction of the unilateral positive Babinski sign by effective simultaneous bilateral sensory stimulation has been demonstrated in three patients (transient in one) with ipsilateral (to the Babinski sign) hemidysesthesia.

It is hypothesized that the Babinski reflex may be triggered at thalamic and cortical levels as well as in the spinal cord. (Authors' abstr.)

Differential Action of Anoxia, Asphyxia and Carbon Dioxide on Normal and Convulsive Potentials.

Anoxia induced by inhalation of 4 per cent. O_2 or of N_2 abolishes convulsive potentials at a time when normal potentials are practically unchanged. On readmission of air normal potentials appear in the previously convulsive areas before the convulsive spikes reappear. There is no indication of an excitatory phase in anoxia.

Asphyxia induced by cessation of artificial respiration abolishes likewise spikes before normal potentials and leads to an earlier reappearance of the latter on readmission of air. In addition, asphyxia causes a temporary excitation characterized by an increased frequency of spikes and, in the normal cortex, by an increase in background potentials and a decrease in dial potentials.

When anoxia or asphyxia is carried out until convulsive and normal, grouped (dial) potentials are abolished, their restitution on reoxygenation is preceded by continuous small potentials which are considered to be the equivalent of the increased post-anoxic excitability.

Convulsive potentials may be replaced in the course of anoxia or asphyxia by dial potentials which were absent in the same cortical area as long as convulsive activity persisted. Moreover, under favourable conditions, progressive anoxia and asphyxia are accompanied by a decreasing spike amplitude while on reoxygenation their magnitude increases. These data seem to indicate that anoxia and asphyxia induce a progressive decruitment of cortical cells and reoxygenation a progressive recruitment. The limiting factor which determines the number of discharging neurons and the degree of their activity (convulsive *is* non-convulsive) seems to be the supply of oxygen.

The restitution of normal oxygenation of the blood after anoxia and asphyxia is often accompanied by a rebound which is shown in the normal cortex in the form of more frequently appearing groups of dial potentials and in the convulsive cortex as increase in frequency of spikes. During this rebound convulsive potentials may appear which were absent under control conditions due to the application of sub-threshold concentrations of the convulsant drug.

Hypercapnia induced by inhalation of 10·6 per cent. CO_2 causes excitation of normal and particularly of convulsive potentials (increase in frequency).

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Unilateral Prefrontal Lobotomy with Relief of Ipsilateral, Contralateral and Bilateral Pain.

Three cases are here reported which indicate that unilateral prefrontal lobotomy will relieve ipsilateral, contralateral and bilateral pain. Symptoms commonly associated with the withdrawal of morphine from patients previously heavily addicted to its use because of pain did not occur following unilateral prefrontal lobotomy in the cases here reported. (Author's abstr.)

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1. Biochemistry, Pathology, Physiology, etc.

Effect of the Injection of Glucose into the Cerebrospinal Fluid. Lackey, Robert W. (*Southwestern Med. Coll., Dallas, Texas*). [*Science*, **106**, 618 (1947).]

During repeated experiments L. was unable to corroborate the findings of Marinelli and Giunti (*C. A.*, **41**, 5211*a*) that the injection of small amounts of glucose into the cisterna magna results in a hypoglycemic reaction in dogs.

JOHN R. CLOPTON (Chem. Abstr.).

Qualitative Spinal Fluid Protein Determination. A Comparative Study. Binkley, Geo. W., and Johnson, Herbert H., jun. (*Western Reserve Univ. School of Med., Cleveland, O.*). [*Am. J. Syphilis, Gonorrhea, Venereal Diseases*, **31**, 657–60 (1947).]

Protein analyses of spinal fluids were compared with several qualitative tests for elevated protein concentrations (greater than 40 mg./100 c.c.). Saturated phenol solutions gave positive tests in almost all spinal fluids. Saturated $(NH_4)_2SO_4$ and 5 per cent. phenol solutions gave the most satisfactory differentiation between normal and elevated protein content, the former having a slightly greater specificity.

A. DIETZ (Chem. Abstr.).

The Blood-Glucose Curve in the Tolerance Test and High Glucose in the Spinal Fluid Produced Artificially. Marinelli, Luigi, and Giunti, Valentino (*Univ. Perugia*). [*Arch. sci. med.*, **84**, 298–302 (1947).]

After the ingestion of 0·75 gm. per kgm. of glucose and while the blood glucose was increasing, a few c.c. of spinal fluid was withdrawn and replaced by a solution containing 0·3 to 0·4 gm. of glucose. The increase of glucose in the blood showed within 10–15 minutes a significant depression, as compared with control tests without spinal injections and the maximum level of glucemia remained lower.

A. E. MEYER (Chem. Abstr.).

Lipoid Content in the Spinal Fluid in Epilepsy. Carrega Casaffousth, C. F., Brage, Diego, and Rivas, Lucio. [*Semana med.* (*Buenos Aires*), **11**, 81–4 (1947).]

In 18 patients during epileptic attacks and in the intervals the spinal fluid had a high lipoid content with reduction of free cholesterol and fatty acids. While fatty acids were reduced and phospholipides increased during the attack, the blood showed no such changes. A. E. Meyer (Chem. Abstr.).

An Acetylcholine Complex in Nervous Tissue. Welsh, J. H., and Prajmovsky, M. (*Harvard Univ.*). [*J. Biol. Chem.*, **171**, 829–30 (1947).]

The acetylcholine complex found in skeletal muscles has been partially demonstrated in brain and peripheral nerves. The effects of various methods of tissue preparation on acetylcholine are discussed. H. O. Singher (Chem. Abstr.).

Effect of Alkaloids on Acetylcholine and Potassium Sensitivity of Striated Muscle. Torda, Clara, and Wolff, Harold G. (*Cornell Univ. Med. Coll., New York, N.Y.*). [*J. Lab. Clin. Med.*, **32**, 1374–7 (1947).]

Shortening of the excised rectus abdominis muscle of the frog was induced by immersion in Ringer solution (1) containing 50 γ acetylcholine-Br per 100 c.c. for 2 minutes, or by immersion in a 20 m. M Cl solution for the same period. Between shortenings, the muscle was washed with (1) for 10 minutes, or with (1) for 5 minutes and (1) containing the alkaloid for 5 minutes. The sensitivity of the muscle to acetylcholine was increased by physostigmine, colchicine, adrenaline (II), ergotamine, pilocarpine, morphine, and yohimbine, and was decreased by atropine (III), amphetamine (IV), cinchonine (V), cocaine (VI), codeine (VII), ephedrine, quinidine (VIII), quinine (IX), strychnine (X), d-tubocurarine (XI) and veratrine (XII). All alkaloids except (II) and (VI) increased K sensitivity. K sensitivity was decreased by (II) and (VI) and, in higher concentrations by (III), (VIII), (IX), (X) and (XI). A curare-like effect was shown by (III), (IV), (V), (VII), (VIII), (IX), (X), (XI) and (XII) in that they induced a decrease of acetylcholine sensitivity in low concentrations which did not modify K sensitivity.

Marshall E. Deutsch (Chem. Abstr.).

Acetylcholine and Body Temperature. Burn, J. H., and Dutta, N. K. (*Oxford Univ., Eng.*). [*Nature*, **161**, 18 (1948).]

Atropine, benadryl, pethidine, and quinidine cause a fall in body temperature of mice as does procaine. The fall is augmented by adrenalectomy. Since a depressant action on acetylcholine is common to all these substances it is postulated that maintenance of body temperature depends upon a mechanism in which acetylcholine plays a part and that the adrenal glands support such a mechanism against the depressant action of these substances.

Bernard Wolnak (Chem. Abstr.).

New Data of the Function of Acetylcholine in the Transmission of Excitation in Neuromuscular Synapses. Angyan, A., and Lissak, K. [*Byull. Eksptl. Biol. Med.*, **23**, 166–8 (1947).]

Short and rapid contractions of isolated muscle fibers of the subhyoid membrane of the frog were observed after small and, sometimes, very small doses of acetylcholine, but no effect on the threshold to indirect excitation was noticed. With larger doses of acetylcholine indirect excitation is caused, and with still larger doses the paralytic action of acetylcholine is observed.

W. R. Eichler (Chem. Abstr.).

A Substance in Brain which Sensitizes Muscle to Acetylcholine, and a Biological Method for the Determination of Acetylcholine in Nerve Tissue. Babskii, E. B., and Minaev, P. F. (*Acad. Med. Sci., Moscow*). [*Byull. Eksptl. Biol. Med.*, **22**, *No.* 4, 5–8 (1946).]

It was found that emulsions of rabbit or guinea-pig brains in which the acetylcholine (1) was destroyed increased the action of added (1) on the rectus abdominis of the frog. The nature of the increase is not known, although it was found that the K ion produced a similar effect. It is suggested that the difficulty in the assay procedure introduced by this factor can be avoided if the total activity of

the fresh tissue emulsion is compared with that found after the addition of a known quantity of (I) to the preparation after the complete destruction of the (I) originally present. EUGENE ROBERTS (Chem. Abstr.).

Old-time Antiacetylcholine Medication. Potency and Duration of Action of the Alkaloids of the Poisonous Solanaceae, Morphine, Barbituric Acid, and some Synthetic Compounds as Measured by the Aerosol Method with Guinea Pigs. Favre, M., Frommel, Ed., and Vallette, F. (Univ. Geneva, Switz.). [*Acta Pharmacol. Toxicol.*, **3**, 41–50 (1947) (*in French*).]

The protective action of the compounds in guinea pigs forced to inhale an aerosol of acetylcholine was studied. Atropine (75–100 γ/kgm.), hyoscyamine (50 γ/kgm.), and scopolamine (30 γ/kgm.) were highly protective. Morphine barbiturates, and 2-diethylaminoethyl diphenylacetate (trasentin) had little or no protective action. L. E. GILSON (Chem. Abstr.).

The in vitro *Reversibility of Cholinesterase Inhibition by Diisopropyl Fluorophosphate (DFP). Nachmansohn, David, Rothenberg, Mortimer A., and Feld, Emily A. (Columbia Univ.).* [*Arch. Biochem.*, **14**, 197–211 (1947); *cf. C. A.*, **39**, 3798[1].]

The reversal of the inhibition of cholinesterase by diisopropyl fluorophosphate is dependent on the temperature and the inhibitor concentration. The cholinesterase used in these studies was obtained from the tissues of *Electrophorus electricus* and from the nucleus caudatus of the ox. The percentage of reactivation decreases with time of exposure to the inhibitor; it decreases with increasing temperature and with increasing concentration of the inhibitor. The reversal of inhibition is obtained on dilution of the enzyme inhibitor solution.

VERNON L. FRAMPTON (Chem. Abstr.).

Studies on Cholinesterase. IV. The Mechanism of Diisopropyl Fluorophosphate Action in vivo. *Nachmansohn, David, and Feld, Emily A. (Columbia Univ.).* [*J. Biol. Chem.*, **171**, 715–24 (1947); *cf. C. A.*, **41**, 5155*a*.]

Injection of 1 mgm./kgm. of diisopropyl fluorophosphate (I) into a rabbit is lethal within a few minutes and cholinesterase (II) of the brain tissue is completely inactivated. At the threshold dose of 0·3 mgm. of (I) negligible amounts or none of (II) is found in the brains of those animals that die. But in the brain of the surviving rabbits (II) is always present. In view of the specificity of the action of (I) and the powerful effect on (II) in low concentration, the coincidence of death and inactivation of (II) suggest that the toxicity of the compound is due to its action on the enzyme. H. O. SINGHER (Chem. Abstr.).

Comparative Activity of Serum Cholinesterase and Globular Cholinesterase of Normal Human Blood in the Presence of Folic Acid. (I) *Preliminary. des Marais, Andre (Univ. Laval, Quebec, Can.).* [*Rev. can. biol.*, **6**, 802–7 (1947).].

The cholinesterase of normal human blood is divided into 2 fractions; serum cholinesterase and globular cholinesterase. A study of the activity of each of these fractions by the Warburg manometric method shows that only globular cholinesterase is activated in the presence of folic acid. The action of folic acid, as shown, could form the basis of a method for differentiating between the specific cholinesterase and the pseudocholinesterase.

A. PAPINEAU-COUTURE (Chem. Abstr.).

Effect of Undernutrition and Alterations in Diet on the Cholinesterase Activity of Serum. McCance, R. A., Widdowson, E. M., and Hutchinson, A. O. (Univ. Cambridge, Eng.). [*Nature*, **161**, 56–7 (1948).]

Numerous observations have revealed that the general level of nutrition and certain changes in diet may exert considerable influence on the total or true cholinesterase (I) activity of serum. The results also suggest that the average level of total esterase in the serum is a delicate index of the state of nutrition of any group of men in Germany to-day. Thus a rise in (I) has twice been observed to follow an improvement in the diet of a group of subjects. When weight was

lost, the (I) content also fell. It is not thought that these increases in (I) were due to digestion, absorption, and metabolism of fat setting free nonspecific esterases into the serum, for when six men were given a supplement of 100 gm. of fat daily for 3 days, there was no increase in total (I) of their serums.

BERNARD WOLNAK (Chem. Abstr.).

Cholinesterase Activity in Cerebrospinal Fluid. Reiss, M., and Hemphill, R. E. (Bristol Mental Hospital, England).]*Nature*, **161**, 18 (1948).]

Cholinesterase activity was determined by Warburg's method at 37·5° and the result expressed in cu. mm. of CO_2 produced by 1 ml. cerebrospinal fluid in a 30-minute period. From 1·6 to 2·0 ml. of the fluid with 0·2 ml. 2 per cent. bicarbonate was put in the main vessel and in the side arm 0·2 ml. of the substrate solutions, which consisted of 0·3 M acetylcholine (I), 0·3 M acetylmethycholine (II), or 0·06 M benzoylcholine (III). The fluid was obtained from patients suffering from organic and nonorganic psychoses. The cholinesterase activities were: (I) 6·6 to 28·4 cu. mm. CO_2; (II) 5·4 to 23·6 cu. mm. CO_2; (III) 2·3 and 6·2 cu. mm. CO_2. The ratios of cholinesterase activity of cerebrospinal fluid to activity of blood serum were: (I) 1/90 to 1/150; (II) 1/8 to 1/40; (III) 1/125 to 1/300. The cholinesterase was not absorbed by Permutit, kieselguhr, or alumina.

BERNARD WOLNAK (Chem. Abstr.).

Selective Inhibition of Pseudocholinesterase by Diisopropyl Fluorophosphate. Hawkins, R. D., and Mendel, B. (Univ. of Toronto, Can.). [*Brit. J. Pharmacol.*, **2**, 173–80 (1947).]

Diisopropyl fluorophosphate (DFP) inhibits both true and pseudocholinesterases, but higher concentrations of DFP are necessary in the case of the former. This renders it possible to inhibit pseudocholinesterase selectively. Acetylcholine is hydrolyzed *in vitro* by both enzymes; therefore this substance cannot be used as substrate to correlate the degree of inhibition of true cholinesterase by DFP and the effects resulting from this inhibition *in vivo*. Since true cholinesterase is responsible for hydrolysis of acetylcholine at nerve endings, its inhibition must be determined when a correlation between anticholinesterase action and pharmacological effects is investigated.

WM. M. GOVIER (Chem. Abstr.).

Influence of the Anticholinesterase Diisopropylfluorophosphate on Cardiovascular and Respiratory Reflexes of Carotid Sinus Origin and on the Pharmacological Actions of Prostigmine and Eserine. Heymans, C. (Univ. Gand, Belg.). [*Compt. rend. soc. biol.*, **140**, 1194–5 (1946); *cf. C. A.*, **40**, 5837^9, 6663^2.]

L. E. GILSON (Chem. Abstr.).

Diisopropyl Fluorophosphate (DFP) and Cholinesterase. Heymans, C., and Jacob, J. (Univ. Gand, Belg.). [*Arch. intern. pharmacodynamie*, **74**, 233–52 (1947).]

Diisopropyl fluorophosphate (5 mgm./kgm.) in nonanesthetized dogs produces convulsions, muscle twitchings, bronchospasm, hyperperistalsis and bladder contractions but no increased blood pressure or change of heart rate. Larger doses slow the heart. Atropine suppresses the effects except the convulsions and muscle twitchings. Nembutal decreases the convulsions. The muscle twitchings persist in denervated muscle but do not occur after axon degeneration. Injection of DFP into the perfused dog head does not increase the direct or reflex excitability of the cardio-inhibitory vagal and respiratory centers.

M. L. C. BERNHEIM (Chem. Abstr.).

Studies on Sleep. IV. Serum Cholinesterase Activity of Chickens when Awake and During Natural Sleep. Frommel, E., Beck, I. T., Favre, M., and Vallette, F. (Univ. Geneve, Switz.). [*Helv. Physiol. et Pharmacol. Acta*, **5**, 361–3 (1947) (*in French*); *cf. C. A.*, **41**, 5626*c*.]

The cholinesterase activity of chicken blood obtained by decapitation is always considerably higher than that of blood obtained by vein puncture. During natural sleep the cholinesterase activity of the serum decreases 10–40 per cent.

L. E. GILSON (Chem. Abstr.).

Development of Nervous Activity and the Chemical Factors of Nervous Excitation in Chick Embryos. Kakushkina, E. A. (Biol. Museum, Moscow). [*Byull. Eksptl. Biol. Med.*, **22**, *No.* 8, 21–3 (1946) (*in Russian*) : *C. A.*, **41**, 7489*f*.]

Total acetylcholine increased in chick embryos from the second to the fourth day of incubation, dropped on the fifth day, remained almost constant through the seventh day, rose on the eighth day, dropped on the ninth day, and rose again on the tenth day. The activity of cholinesterases did not follow the same pattern. The esterases increased up to the second day, remained approximately stationary on the third day, then increased on the fourth day. From the fourth to the fifteenth day (the end of the period studied) there were minor fluctuations. Kakushkina points out that chickens have a precocious development. Shortly after hatching, they can walk and feed themselves. Their nervous system, therefore, must be developed and ready to function in embryonic life. The early development of acetylcholine esterases roughly parallels the early development of the nervous system. NELLIE M. PAYNE (Chem. Abstr.).

Chemistry of the Nervous System. Alsterberg, G. [*Arkiv. Zool.*, 36*A*, *No.* 8, 13 *pp.* (1945) ; (*Reprint*).]

A review of the author's histochemical studies on the nervous system.
C. L. B. (Chem. Abstr.).

Experiments Supporting the Phase-boundary Theory of the Electric Potential in Nerve. Barnes, T. Cunliffe, and Beutner, R. (Hahnemann Med. Coll. and Hosp., Philadelphia, Pa.). [*Exptl. Med. Surg.* (**3**), 325–9 (1945).]

The old permeability theory of the action current in nerve is inadequate in the light of recent experiments showing the pronounced phase-boundary potential produced by acetylcholine in contact with lipides. The phase-boundary theory provides an explanation of the distinctive electric features of adrenergic and cholinergic nerves. Experiments with oil layers provide a phase-boundary mechanism for the sensitization of oil " membranes " to acetylcholine.
MARION HORN PESKIN (Chem. Abstr.).

Korsakow's Syndrome in Relation to Atrophy of the Brain and Carbon Monoxide Poisoning. Bilikiewicz, T. [*Polski Tygodnik Lekarski* (**1**), 1256 (1946) ; *Brit. J. Ind. Med.*, **4**, 247 (1947).]

Korsakow's syndrome (memory defects, compensatory fantasies, and lowering of the intelligence standard), with radiological evidence of brain atrophy and internal hydrocephalus, and encephalographic evidence of uniform enlargement of all cerebral ventricles were found in a man 21 years after severe CO poisoning. The patient had been in coma for 5 days after the poisoning and had then suffered from grave neuromotor and mental impairment, with improvement after 5 months.
MARION HORN PESKIN (Chem. Abstr.).

A Fluid Electrode for Nerve-stimulation Experiments. Ross, D. A. (McGill Univ., Montreal, Can.). [*Rev. can. biol.*, **6**, 544–7 (1947) (*in English*).]

An electrode is described which fulfills the following requirements : the nerve is kept warm and moist ; fluid of appropriate composition is supplied and removed continuously to remove toxic products of tissue activity ; the c.d. throughout the area in which the nerve is free to move is so nearly uniform that adventitious changes of position produce negligible changes in response ; the nerve can be placed in position easily and maintained there throughout an experiment without risk of mechanical abuse such as stretching or sharp bending ; the electric pathway within the electrode presents to the stimulation apparatus a constant and reasonable electric impedance. A. PAPINEAU-COUTURE (Chem. Abstr.).

Variations in Nervous Excitability Produced in Man by Breathing Air Enriched in Carbon Dioxide. Beyne, J., Chauchard, B., and Chauchard, P. (Sorbonne, Paris). [*Compt. rend. soc. biol.*, **141**, 368–70 (1947) ; *cf. C. A.*, **40**, 5480^4 ; **41**, 1744*c*.]

Breathing air containing 1·5–6·0 per cent. of CO_2 caused an important increase in the chronaxia of the peripheral nerves after 7–15 minutes. Air containing 0·25–0·50 per cent. caused a transient decrease in chronaxia after 15–20 minutes, followed by a rise to a little above normal. L. E. GILSON (Chem. Abstr.).

Biochemical Development of the Chick Embryo Brain : Action of Testosterone Propionate. Mandel, P., Stoll, R., and Bieth, R. (Univ. Strasbourg, France). [*Compt. rend. soc. biol.*, **141**, 676–8 (1947) ; *cf. C. A.*, **42**, 656*c*.]

Testosterone propionate, 0·1–2·5 mgm. in oil, was applied to the embryo at the start or 2 or 7 days after beginning incubation. The growth of the brain was retarded and its lipide content was found below normal when examined on the 13th or 19th days of incubation. L. E. Gilson (Chem. Abstr.).

Biochemical Development of the Brain of the Chick Embryo During the Second Half of the Incubation Period. Mandel, P., Stoll, R., and Bieth, R. (Univ. Strasbourg, France). [*Compt. rend. soc. biol.*, **141**, 416–18 (1947).]

Total protein, total lipides, lipide N, protein P, and lipide P were determined at intervals from the 10th to the 19th day of incubation. The results indicate that during this period nucleoproteins increase less rapidly than the other constituents. The percentage of total ash decreases. The water content decreases from 88·6 per cent. on the 10th day to 84·2 per cent. on the 19th.

L. E. Gilson (Chem. Abstr.).

The Distribution of the Lipoids in the White Matter of the Spinal Cord. Alsterberg, Gustaf (Eksjo, Sweden). [*Arkiv. Zool.*, **36B**, *No.* 3, 1–6 (1945).]

The author's extraction and pregnation method (*C. A.*, **35**, 7433[3] ; **36**, 7096[5]) was used on the spinal cord of cow. Alternate extraction with acetone and water gives the carnitine fraction ; acetone gives the cholesterol fraction (fatty acids and cholesterol) ; ethanol, ether, methanol, pyridine, and $CHCl_3$ extracts are combined as the third fraction (lecithin, cephalin, sphingomyelin, cerebrosides) ; the residue is the dry-substance fraction. Cholesterol and cerebrosides are the chief constituents of the myelin sheath, whereas lecithin and sphingomyelin constitute the axis cylinder. Sphingomyelin is possibly present in the axilemma of Mauthner ; perhaps also protein-bound cephalin. Serine cephalin and inosite cephalin are surely present in the glia-structures ; cerebrosides and sphingomyelin also may be present ; the presence of colamine cephalin is uncertain.

E. Vasseur (Chem. Abstr.).

Hyperglycemia Induced by the Action of Adrenaline on the Central Nervous System. Leimdorfer, A., Arana, R., and Hack, M. H. (Univ. of Illinois Coll. of Med., Chicago). [*Am. J. Physiol.*, **150**, 588–95 (1947).]

The barrier between blood and cerebrospinal fluid was found to be practically impermeable to adrenaline. Adrenaline injected into the subarachnoid space, although it fails to affect blood pressure or electrocardiogram, causes a rapid, high and sustained rise in the concentration of the glucose in blood. The site of action and the efferent paths are undiscovered in spite of lesions made to prevent participation of the autonomic nervous system and the hypophysis.

E. D. Walter (Chem. Abstr.).

Central Excitant Action of Diisopropyl Fluorophosphate. Chennells, Mary, and Wright, Samson (Middlesex Hospital Med. School, London). [*Nature*, **160**, 503 (1947).]

Diisopropyl fluorophosphate (I) is a central excitant like eserine, but larger doses of (I) were required to produce similar effects. In large doses (I) produced convulsions violent in character and long-sustained ; in decerebrate animals marked increases or phasic fluctuations in tone occurred. Reflex changes such as enhancement of the knee jerk occurred independently of alterations in blood pressure, respiration, or of peripheral potentation of the nerve-muscle response ; they are independent of the presence of the anesthetic, chloralose, or of the cerebrum. (I) thus acts on the central nervous system facilitating excitatory transmission in the spinal cord and brain stem. Bernard Wolnak (Chem. Abstr.).

The Influence of pH on the Silver Staining of Nervous Tissue. Lascano, Eduardo F., [*Rev. asoc. med. argentina*, **61**, 357–60 (1947).]

The keeping of nervous tissue in 10 per cent. formol for a long time facilitates silver staining owing to acidification of the fixative by the formation of formic acid.

The same results can be obtained by fixing the tissues in 10 per cent. formol acidified with other acids (H_2SO_4, HCl, CH_3COOH).

E. S. Guzman Barron (Chem. Abstr.).

Gargoylism. Review of the Literature and Report of the Sixth Autopsy Case with Chemical Studies. Strauss, Reuben, Merliss, Reuben, and Reiser, Raymond (Cedars of Lebanon Hosp., Los Angeles, Calif.). [*Am. J. Clin. Path.*, **17**, 671–94 (1947).]

A case of gargoylism is discussed with detailed chemical, clinical, X-ray and necropsy studies. Chemical analyses of the tissues revealed a significant increase of lipide in the lymph nodes, but not in the brain, liver, or spleen. The increase was simple fat, probably in combination with complex protein. The fact that it is not a phospholipide, cerebroside, or cholesterol separates this disturbance from the idiopathic lipide dystrophies. John T. Myers (Chem. Abstr.).

Biochemical Processes in the Brain in Direct Irradiation by X-rays. Blokhin, N. N., Graevskaya, B. M., and Keilina, R. Ya. (Central Roentgenol. Radiol. Cancer Inst., Leningrad). [*Byull. Eksptl. Biol. Med.*, **23**, 338–42 (1947).]

X-ray irradiation of dog brain, at 160 kv., at 23-mm. distance by using 0·5 Cu–3·0 Al filter, each dog receiving a total of 5 unit skin doses of irradiation in 4 exposures with alternate irradiation of the right and the left temple area, was investigated in respect to biochemical effects by determination of blood sugar (femoral artery and sinus venosus cerebri), spinal fluid sugar, blood serum protein, and the albumin-globulin fractions of the latter. As the total irradiation increased, the total serum protein rose until on the 90th day (after the 1st irradiation) it reached 200 per cent. of the initial value. In the same period the albumin fraction rose by only 26 per cent. for arterial and 32 per cent. for venous blood, while the globulin fraction rose 324 and 323 per cent., respectively. The absolute amount of protein in the spinal fluid remained within experimental variations, but its albumin/globulin ratio gradually changed to 1·0 from 0·56. Arterial blood sugar remained normal, but it fell in the venous blood, until the sugar utilization by the brain at the 90-day period was 370 per cent. of initial. Spinal fluid sugar did not increase. The changes are ascribed to a colloidal swelling of the brain cells, with decreased amount of intracellular fluids. G. M. Kosolapoff (Chem. Abstr.).

Role of the Nervous System in the Regulation of the Absorptive Processes of Carbohydrates in the Animal Organism. Blokhin, N. N., and Lyzlova, S. N. (Lenin Univ., Leningrad). [*Byull. Eksptl. Biol. Med.*, **22**, No. 4, 21–3 (1946).]

Dogs were prepared by London's technique of angiostomy with a cannula in the portal vein. The glucose contents of arterial blood from the femoral artery and of venous blood from the portal vein were determined prior to the introduction of 2·5 gm. of glucose per kgm. into the gastro-intestinal tract and at various time intervals thereafter following the injection of calcium gluconate (I) or potassium phosphate (II) into the subarachnoid space. (II), which acts on the sympathetic centers, was found greatly to increase the rate of absorption of glucose. The maximum blood levels of glucose were attained in ½ hour, instead of the 1–1½ hours required when no salt was injected, and a maximum arterial-venous difference of 93 mgm. per cent. was reached. (I), which acts on the parasympathetic centers, caused a marked delay in the rate of absorption ; it resulted in very small arterial-venous differences. The absorption curve in the latter instance is similar to that shown by animals under anesthesia, in which case it has been established that the absorption of glucose becomes a simple diffusion process.

Eugene Roberts (Chem. Abstr.).

Basal Metabolism Affected by Experimental Lesion in the Cerebral Cortex of the White Rat. Wu, Yun-Jui, Chiu, Tso-Lin, and Ping, Chi. [*Contrib. Biol. Lab. Sci. Soc. China, Zool., Ser.* **16**, 97–108 (1942) (*in English*).]

In white rats with fronto-parietal cortical lesions the body temperature was unchanged and the R.Q. deviations were within 10 per cent. of the normal value. Basal metabolism was subject to greater deviations, particularly after fasting, and also underwent cyclic changes. J. G. Yoshioka (Chem. Abstr.).

Sex Hormones and the Nervous System. Chauchard, P. (École pratique hautes études, Paris). [*Arch. intern. pharmacodynamie*, **74**, 286–94 (1947).]

A single injection of sex hormones into rats and guinea pigs causes medullary excitation and cerebral depression regardless of the sex of the animal. Repeated doses cause excitation in all parts of the central nervous system. Excitation produced by folliculin is counteracted by testosterone or progesterone, but the reverse is not true. M. L. C. Bernheim (Chem. Abstr.).

Central Nervous Ketosis. Schrade, W. (Städt, Krankenhaus, Arnstadt, Germany). [*Deut. Gesundheitsw.*, **2**, 409–11 (1947).]

Injection of air into the cerebral ventricles of rabbits caused a hyperketonemia in about 20 minutes, lasting 1–3 hours. Hyperglycemia also was seen, but the curves of blood-sugar and ketone-body levels seemed to be independent of one another. About 3 or 4 hours after the injection, a hypolipemia lasting 4 or 5 hours was manifested, and in certain cases was followed by hyperlipemia. These reactions are thought to be due to an increase in fat catabolism caused by central nervous stimulation. A human case is described in which a ketosis of about 24 hours' duration followed a cerebral embolism.

Marshall E. Deutsch (Chem. Abstr.).

Potassium and Periodic Paralysis. A Metabolic Study and Physiological Considerations. Gass, Harvey, Cherkasky, Martin, and Savitsky, Nathan. [*Medicine*, **27**, 105–37 (1948).]

Attacks of paralysis were induced on each of two occasions in a patient with periodic paralysis by the ingestion of 300 gm. of glucose in hypertonic solution. The attacks were accompanied by falling serum K levels but not excessive K excretion, a less sustained fall in serum P level, an increased excretion of creatine and creatinine, and bigeminal cardiac rhythm. A suppression of urinary excretion of both P and K was noted during the phase of maximum paralysis and a rise during recovery. Evidence is presented which supports the hypothesis that hepatic intermediate carbohydrate metabolism plays an important role in periodic paralysis by lowering K content of muscle. F. B. Seibert (Chem. Abstr.).

2. Pharmacology and Treatment.

The Effect of Ascorbic Acid in Reducing the Inhibition of Brain Metabolism Produced by Pentobarbital in vitro. *Greig, Margaret E. (Vanderbilt Univ. Med. School, Nashville, Tenn.).* [*J. Pharmacol. Exptl. Therap.*, **91**, 317–23 (1947); *cf. C. A.*, **40**, 5145[8].]

Ascorbic can reduce the inhibiting action of pentobarbital (nembutal) on oxidation of carbohydrate by rat brain *in vitro*. It also decreases the acceleration of anaerobic glycolysis provoked by pentobarbital when glucose is the substrate. Cytochrome c increases the effect of ascorbic acid to a variable degree by further reducing the inhibition produced by pentobarbital. It may be that by alternate oxidation and reduction the ascorbic acid acts to provide an alternate route for oxidation; this by-passes the block at the flavoprotein-cytochrome b stage produced by pentobarbital. L. E. Gilson (Chem. Abstr.).

Role of the Liver in the Detoxication of Thiopental (Pentothal) and Two other Thiobarbiturates. Shideman, F. E., Kelly, A. R., and Adams, B. J. (Univ. of Michigan, Ann Arbor). [*J. Pharmacol. Exptl. Therap.*, **91**, 331–9 (1947).].

In mice, CCl_4 liver damage significantly prolonged the duration of the effects of 5-allyl-5-(1-methyl-butyl)-2-thiobarbituric acid, 5-ethyl-5-isoamyl-2-thiobarbituric acid (thioethamyl), and Na 5-ethyl-5-(1-methylbutyl)-2-thiobarbiturate (pentothal). Subtotal hepatectomy in rats significantly prolonged the action of pentothal. Diminished blood flow through the liver, as produced by an Eck fistula in rats, increased the duration of action of all three compounds. Pentothal was degraded *in vitro* by rat liver slice and mince.

L. E. Gilson (Chem. Abstr.).

Effect of Ether and Pentobarbital on the Polarization State of Central Nervous Elements. Van Harreveld, A. (California Inst. Technol., Pasadena). [Am. J. Physiol., **150**, 541–50 (1947).]

The administration of the narcotics, pentobarbital and ether, does not produce a constant voltage between the gray and white matter of the spinal cord. During asphyxiation of the cord, the gray matter becomes negative with respect to an anterior root. Pentobarbital and ether depressed this asphyxial depolarization potential. It is concluded that these narcotics cause a uniform depolarization of the neuron. Asphyxial depolarization potentials were led off from the cerebral cortex, and were similarly influenced by pentobarbital as the spinal asphyxial potentials. An attempt is made to combine these other known effects of narcotics on nervous structures in a theory of narcosis.

E. D. Walter (Chem. Abstr.).

Detoxification of Barbiturates. Dorfman, Albert, and Goldbaum, Leo R. (Army Med. Research Dept., Washington, D.C.). [J. Pharmacol. Exptl. Therap., **90**, 330–7 (1947).]

Pentothal and seconal are rapidly destroyed in the intact mouse, phenobarbital is destroyed to a lesser extent, and barbital apparently not at all. Rabbit liver slices degrade pentothal, seconal, amytal and pentobarbital, and to a slight extent aleurate. Liver homogenate shows no such activity. Pentothal was the only barbiturate among those tested which was degraded by rabbit kidney slices. Finely chopped rabbit muscle and brain did not destroy any of the barbiturates tested, except for a slight action on pentothal by brain. There is considerable evidence that the kidney breaks down only the malonylthiourea ring, while liver acts on both the malonylthiourea and malonylurea rings. The speed with which the rings are attacked varies with the nature of the side chains.

L. E. Gilson (Chem. Abstr.).

Antagonism Between Barbiturates and Picrotoxin. De Soto, F. Fernández, Núñez, A. Ortega, and Ventura, A. Estades. [Farmacognosia (Madrid), **6**, *No.* 10, 113–51 (1947).]

Dogs and cats who received toxic doses of phenobarbital (I) by mouth or intravenously can be awakened and kept alive with picrotoxin (II). Suboccipital administration of (II) is faster and more intensive than intravenous, and smaller doses are required. As the action of (II) disappears after 1–2 hours and that of (I) lasts up to 5–6 days, repeated injections of (II) is necessary. The value of an oil solution of (II) for prolonged effect is studied.

K. Schoen (Chem. Abstr.).

Effects of Dithiobiuret on the Central Nervous System. Altschul, Sol (Illinois Neuropsychiatric Inst., Chicago). [Proc. Soc. Exptl. Biol. Med., **66**, 448–51 (1947).]

Dithiobiuret is an effective anticonvulsant in rats only when given in toxic doses. The most probable site of action is the efferent system of the spinal cord. Moderate doses do not affect the electroencephalogram.

L. E. Gilson (Chem. Abstr.).

The Comparative Value of Pentothal Sodium, Curare, and Magnesium Sulfate for the Modification of Metrazole Convulsions. Rising, Jesse D., and Carroll, M. C. (Univ. of Kansas, School of Med., Kansas City, Kansas). [J. Kansas Med. Soc., **47**, 297–9 (1946).]

Preliminary experiments on fairly large dogs indicated that Mg-SO_4 might be the most desirable " softening agent " were it not for the possibility of sudden cardiac arrest. Pentothal-Na is superior to Mg-SO_4, and far superior to curare as a modifying agent for metrazole convulsions. It has the added advantage of few toxic possibilities. The question of its applicability in the treatment of mental disorders is not settled, but the work on Na amytal justifies the belief that pentothal may be clinically useful.

Ruth Berggren (Chem. Abstr.).

*Action of Digitalis Glycosides on the Central Nervous System with Special Reference to the Convulsant Action of Red Squill. Gold, Harry, Modell, Walter, Cattell, McKeen, Benton, Joseph G., and Cotlove, Elaine W. (Cornell Univ. Med. Coll., New York, N.Y.). [J. Pharmacol. Exptl. Therap., **91**, 15–30 (1947).]*

A study was made of the convulsant and cardiac actions of various principles of the digitalis group obtained from red squill (I), white squill, digitalis species, oleander, convallaria and strophanthus. Contrary to prevailing opinion, the conspicuous convulsant action of (I) in the rat is not only a peculiarity of the drug but also of the rat. Evidence is presented that the convulsant action of (I) in the rat is not due to a special convulsant principle but is a function of its cardiac glycosides or perhaps their genins. Amorphous scilliroside (II) from (I) causes poisoning in the rat by a slow convulsant action on the central nervous system after small doses and by a rapid cardiac action without convulsions after large doses. The white squill glycoside, scillicin, is less potent than (II). (II) acts like a typical digitalis glycoside in frogs, cats and man. Ouabain, folinerin, gitalin and digitoxin (most active) produce convulsions in the rat. There is indication that differences in the convulsant activity of the different digitalis drugs are partly due to differences in fixation or speed of elimination and partly to differences in the molecule structure. The convulsant response of the rat provides a means for their qualitative differentiation.

L. E. Gilson (Chem. Abstr.).

*Mechanisms Underlying Pulmonary and Cardiac Complications of Electrically Induced Convulsions. Altschule, M. D., and Tillotson, K. J. (Harvard Med. School, Boston, Mass.). [New Engl. J. Med., **238**, 113–15 (1948).]*

Pulmonary and cardiac complications of therapeutic electric shock can be minimized by use of curare. A solution of d-tubocurarine is the drug of choice, since intocostrin may contain impurities that dangerously exaggerate the vagal impulses that influence cardiac rhythm.

Marion Horn Peskin (Chem. Abstr.).

*Intensity of Brain-tissue Respiration; the Brain and the Muscle Supply of Oxygen, Carbohydrates, and Products of Decomposition of Carbohydrates During Insulin Intoxication. Merezhinskii, M. G. and Cherkasova, L. S. (Med. Inst., Kazan). [Byull. Eksptl. Biol. Med., **22**, No. 1, 31–4 (1946) (in Russian).]*

Guinea pigs, rabbits and dogs were investigated as to brain-tissue respiration in insulin shock by using the Warburg technique on minced tissue in Ringer-bicarbonate suspension. In guinea pigs the brain tissue shows a Q_{O_2} in insulin shock which is 54·3 per cent. of normal value. In rabbits the white brain substance gave 67 per cent., grey matter 52·2 per cent. In dogs the white matter gave 76·1 per cent., grey matter 63·2 per cent. The animals were killed in the condition of deep coma (3–7 hours after insulin administration). Thus insulin shock leads to severe depression of brain respiration. Analysis of arterial and venous blood (to the brain and to the hind quarters) showed that the supply of glucose to the muscle is depressed (37·8 per cent. of normal in deep coma), although the O supply is substantially normal. As the shock developed, the muscle lost its ability to retain glucose, and the venous blood carried as much as 44 per cent. of normal glucose level; the O in venous blood in this case was 143 per cent. of normal. The brain tissue tends to retain glucose in early shock stage but later begins to lose glucose like the muscle. The venous blood from the brain showed severe increase over normal (164 per cent.). In early shock stages glycogen tends to be retained in the muscle and especially in the brain; in deep shock this tendency is substantially lost. Blood lactic acid rises in early shock (probably because of the convulsions); this condition moderates when coma stage is reached. Brain tissue does not utilize lactic acid but actually supplies it to the blood. Pyruvic acid level does not vary significantly. G. M. Kosolapoff (Chem. Abstr.).

*The Metabolic Fate of Chloral Hydrate. Butler, Thomas C. (Johns Hopkins Univ., Baltimore, Md.). [J. Pharmacol. Exptl. Therap., **92**, 49–58 (1948).]*

Methods, based on the Fujiwara reaction (*C. A.*, **11**, 3201), are described in detail for the separate determination of CCl_3CH_2OH, chloral hydrate, and

CCl_3CO_2H when present together in plasma. When chloral hydrate is given intravenously to dogs, its concentration in the plasma falls rapidly. CCl_3CH_2OH and CCl_3CO_2H appear very quickly in the plasma and reach such concentrations as to indicate that very little of the chloral hydrate is oxidized and that a high proportion or perhaps all of the remainder is reduced to CCl_3CH_2OH. The disappearance of CCl_3CH_2OH from the plasma is relatively slow, and the concentrations reached are sufficient to account for most or all of the depressant effect of administration of chloral hydrate. L. E. Gilson (Chem. Abstr.).

Influence of Atropine and Scopolamine on the Central Effects of Diisopropyl Fluorophosphate (DFP). Wescoe, W. Clarke, Green, R. E., McNamara, B. P., and Krop, Stephen. [*J. Pharmacol. Expil. Therap.*, **92**, 63–72 (1948); *cf. C. A.*, **41**, 207*f*.]

Numerous electroencephalograms (EEG) of cats and monkeys are shown. Intocostrin given intravenously in doses sufficient to produce complete skeletal and respiratory paralysis did not affect the EEG pattern. Intravenous DFP produced changes in the EEG which could be prevented or abolished by intravenous injection of atropine or scopolamine. Atropine and scopolamine had no prophylactic or therapeutic effect on convulsions caused by metrazole, strychnine, or gammexane. The experimental data indicate that atropine prevents or annuls the central actions of acetylcholine. L. E. Gilson (Chem. Abstr.).

Comparative Actions of Sparteine and of Procaine on the Autonomic Nervous System. Hazard, Rene, Cheymol, Jean, and Corteggiani, Elisabeth. [*Compt. rend.*, **224**, 1307–9 (1947).]

Sparteine cuts the conduction at the level of the ganglia of the autonomic nervous system; it opposes the action of nicotine and of the nicotine-like substances. Procaine has a formula very different from that of sparteine, but it exercises the same action as the latter. The similarity extends to the modification in excitability of post-ganglionic fibers: both oppose the action of acetylcholine on the heart and arterial pressure, and both accentuate the effects of adrenaline. Only one of the nicotine-like poisons, hordeine, seems to be an exception in that it maintains its action on the arterial pressure and on the intestine in the presence of sparteine, whereas it is suppressed by procaine. In reality when one uses a high dose of sparteine, hordeine exerts no noticeable action on the intestine. A true difference of action is noted between them in the matter of adrenaline inversion by yohimbine. In spite of the presence of an adrenolytic, sparteine renders adrenaline hypertensive, but procaine does not oppose and sometimes accentuates adrenaline hypotension. Sparteine and procaine have very different actions in the latter instance.
Elva G. Shipley (Chem. Abstr.).

Effect of Tetraethyl Pyrophosphate on Sympathetic Ganglionic Activity. Koppanyi, Theodore, Karczmar, Alexander G., and King, Theodore O. (*Georgetown Univ., Washington, D.C.*). [*Science*, **106**, 492–3 (1947).]

The nicotinic (pressor) responses of various doses of acetylcholine were measured in atropinized dogs treated with tetraethyl pyrophosphate (I). The curve relating pressor response to dose of (I) peaked at 0·12 and 15 mgm./kgm. and dropped to 0 at about 70 mgm./kgm. The initial portions of similar curves for (I), hexaethyl pyrophosphate, diisopropyl fluorophosphate, and eserine have different slopes, making strict comparisons difficult; (I) is the most active anti-cholinesterase studied to date. Carl C. Smith (Chem. Abstr.).

Results of Administration of Varying Doses of Sodium Bromide. Millikan, Clark H., Paul, William D. (*Univ. Hosps., Iowa City, Iowa*). [*J. Iowa State Med. Soc.*, **36**, 39–48 (1946); *cf. C. A.*, **39**, 4144^4.]

Varying doses of NaBr were given to 36 hospital patients over long periods of time. Eleven patients developed the syndrome of Br intoxication. The lowest blood Br level at which any patient developed Br intoxication was 195 mgm. per cent. Eight patients first showed evidence of intoxication with blood Br levels between 200 and 300 mgm. per cent. One patient exhibited toxic signs at a

blood Br level of 319 mgm. per cent. A toxic delirium (bromide psychosis) was produced in 9 patients; 8 had blood Br levels between 200 and 300 mgm. per cent. at the time they became psychotic. This syndrome was not produced in any patient with a stable personality. In most patients where bromism occurred there was a marked difference in the blood Br level at which symptoms first appeared and the level at which the subject returned to normal. The fact that some patients do not clear mentally from the effects of bromides until a low blood level is reached may explain the unusually low NaBr levels quoted by some authors as being toxic amounts of the drug. A bromoderma appeared in 4 patients while taking the drug. None of the 36 patients showed any evidence of addiction or habituation to the drug. RUTH BERGGREN (Chem. Abstr.).

Effects of Drugs on Nerve Activity. Gilman, Alfred (Edgewood Arsenal, Md.). [*Ann. N.Y. Acad. Sci.*, **47**, *Art.* 4, 549–58 (1946).]

A short description of the pharmacological effects of Na fluoroacetate, which interferes with acetate metabolism and diisopropyl fluorophosphate which almost irreversibly inhibits cholinesterase. C. C. SMITH (Chem. Abstr.).

Sympatholytics and the Rigidity of Decerebration. Minz, B., and Veil, Catherine (Sorbonne, Paris). [*Compt. rend. soc. biol.*, **141**, 573–4 (1947); *cf. C. A.*, **41**, 807*e*, 5606*d*.]

Sympatholytic drugs of such diverse structures as yohimbine, corynanthine, and piperidinomethylbenzodioxan (F 933) temporarily relax the rigidity of decerebration in rabbits. The rigidity reappears upon elimination of the drug. As a hypothesis it is suggested that the central lesion provokes the liberation of an adrenaline-like agent which augments the formation of acetylcholine in the muscles involved. L. E. GILSON (Chem. Abstr.).

Effect of Acid and Alkali on the Excitation of Central Nervous System by Caffeine and Alcohol. Kaku, Bundan. [*Nagoya Igakkai Zasshi*, **59**, 29–36 (1944).]

Excitation of central nervous system in mice elicited by subcutaneous injection of caffeine or EtOH, as determined by their tracks made on smoked paper flooring of an inverted glass jar into which the animals were placed, was found to be weakened by simultaneous injection of 1 per cent. lactic acid and strengthened by a similar injection of 0·1 N Na_2CO_3. J. G. YOSHIOKA (Chem. Abstr.).

Metabolic Action of the Cardiac Glycosides. I. Influence on Respiration of Heart Muscle and Brain Cortex. Wollenberger, Albert (Harvard Med. School, Boston). [*J. Pharmacol. Exptl. Therap.*, **91**, 39–51 (1947).]

Ouabain, 2–3 × 10^{-7} M, increases the O uptake of slices of guinea-pig heart muscle in the presence of glucose or lactate; at higher concentrations this increase (maximally 50 per cent.) is followed by a depression (maximally 80 per cent.). Of various other guinea-pig tissues studied, only brain cortex responded in a similar manner, and the effect was only about 0·2 as great as with heart muscle. Oxidation of succinate in heart slices is not inhibited by ouabain; in brain it is slightly inhibited. In the presence of ouabain the O uptake of heart slices, which is high initially, is depressed by ouabain without preceding stimulation. The effect of ouabain on O uptake of brain cortex slices is the same with pyruvate as with glucose or lactate. The inhibition of the respiration of brain cortex slices by ouabain cannot be reversed by washing. Ouabain has no significant effect on respiratory activity of homogenized heart and brain and of isolated oxidative systems. This indicates that ouabain does not directly interfere with the catalytic function of respiratory enzymes and that its site of action is probably the cell surface. Its probable action *in vivo* is discussed from this viewpoint.
L. E. GILSON (Chem. Abstr.).

The Physiological Effects of Curare and its Use as an Adjunct to Anesthesia. Harroun, Phyllis, Beckert, Frederick E., and Fisher, Carl W. (Univ. of California Med. School, San Francisco). [*Surg., Gynecol. Obstet.*, **84**, 491–8 (1947).]

The physiological effects of 40 mgm. to 4 gm. of curare were studied in unanesthetized dogs. No deaths were attributed to the specific toxicity of curare.

Apneic doses (56 or 88 mgm.) did not produce anesthesia or analgesia, but a rise in blood sugar averaging 49·9 mgm. per cent. and glycosuria occurred. Electrocardiographic tracings resembled those seen in K poisoning, and electroencephalograms showed cerebral dysrhythmia. Repeated administrations caused no change in the animal's reaction to the drug. Curare neither passes the placental barrier nor paralyzes the uterine musculature of the dog. After intravenous injection of the apneic dose (about 200 mgm.) of curare in man, there was an immediate transient fall in the blood pressure which returned to normal within 5 minutes, a blood sugar rise averaging 13 per cent., and a slight decrease in liver function. There were no significant changes in electrocardiograph tracings or in kidney function.

B. R. Murray (Chem. Abstr.).

Antagonism Between Curare and the Potassium Ion. Quilliam, J. P., and Taylor, D. B. (King's Coll., Univ. of London). [*Nature*, **160**, 603 (1947).]

At constant temperature from 25° to 40°, the antagonism, as measured by paralysis of the rat diaphragm, is linear. Three times more curare is required at 25° to antagonize the K ion normally present in tissue than at 40°. Conclusion: Voluntary muscle seeks positive charges and curare displaces the K ion.

I. M. Klotz (Chem. Abstr.).

A Chemical Method for the Determination of Streptomycin in Blood and Spinal Fluid. Boxer, George E., and Jelinek, Violk C. (Merck & Co., Inc. Rahway, N.J.). [*J. Biol. Chem.*, **170**, 491–500 (1947); *cf. C. A.*, **41**, 6594*e*.]

A method of analysis of streptomycin (I) was devised sensitive to 1 γ of (I) and based on the formation of a hydrazone with 9-*hydrazinoacridine hydrochloride* (prepared by refluxing 9-chloroacridine and $H_2NNH_2.H_2O$ in EtOH). After the removal of the excess reagent and hydrazones of acid, neutral, and weakly basic compounds by extraction with $C_6H_5CH_2$-OH-CCl_4 solution, the amount of hydrazone of (I) was determined fluorometrically. W. S. Port (Chem. Abstr.).

New Investigations on the Anticonvulsant Action of Cocaine. Gutiérrez-Noriega, C., and Ortiz, V. Zapata (Facultad med., Lima). [*Rev. med. exptl. (Lima, Peru)*, **4**, 249–67 (1947); *cf. C. A.*, **41**, 2173*c*.]

Into rats which had received a lethal dose of strychnine subcutaneous injections of 10–70 mgm./kgm. cocaine-HCl (I) or phenobarbital (II) or both together were made. (I) inhibited the convulsions, reduced the intensity of the attack, and increased the latent period of convulsions and the time of survival. There was a close parallel between the percentage of suppressions of convulsions and the time of survival. The optimal action was observed with 40 mgm./kgm. of (I). (II) had less anticonvulsive effects but the percentage of survival, the period of convulsions and the period of survival increased progressively with the dose. The anticonvulsant and antilethal effect of (I) was antagonized by (II). Conclusion: (I) inhibits the convulsions by nervous excitation, (II) by depression of oxidation of the nervous tissue. F. Fromm (Chem. Abstr.).

Experimental Catalepsy Produced by Cocaine. Gutiérrez-Noriega, C., and Ortiz, V. Zapata (Inst. nacl. Hygiene, Lima). [*Rev. med. exptl. (Lima, Peru)*, **4**, 268–83 (1945).]

A dog which received 5 mgm. cocaine-HCl (I) per kgm. body weight on alternating days began to show cataleptic reactions 1 month after beginning of treatment. The reaction was proportional to the dose of (I) (up to 10 mgm. per kgm.) and was preceded and followed by motor excitation which was shorter with higher doses while the time of catalepsis increased. The hyperthermy caused by (I) was less in catalepsy but did not disappear completely. Catalepsy was not produced by (I) if 10–20 mgm. nembutal or phenobarbital per kgm. were injected; only motor unrest was observed in this case. Injection of 30 mgm. sodium caffeine benzoate previous to treatment with (I) intensified the catalepsy while injection of caffeine, metrazole, and nikethamide alone did not produce catalepsy. In the cataleptic state the blood glucose was slightly increased; inorganic P in the blood decreased. Alkaline phosphate, urea, alkaline reserve, and Ca in the blood showed no changes.

Conclusion : Cocaine catalepsy is a more intense excitation of the nervous centers than that which produces motor unrest, but not so intense as that in cocaine convulsions. F. Fromm (Chem. Abstr.).

The Toxicity and Narcotic Action of Bromochloromethane with Special Reference to Inorganic and Volatile Bromide in Blood, Urine and Brain. Svirbely, J. L., Highman, B., Alford, W. C., and Oettingen, W. F. v. (Natl. Inst. Health, Bethesda, Md.). [*J. Ind. Hyg. Toxicol.*, **29**, 382–9 (1947).]

In mice, the LD_{50} for CH_2ClBr is 2994 p.p.m., for CH_2-Cl_2, 16,186 p.p.m., and for CCl_4, 9526 p.p.m. Repeated exposure for 7 hours to 1000 p.p.m. of CH_2ClBr on 5 days per week for 14 weeks was tolerated by rats, rabbits, and dogs without evidence of toxic reaction. No significant changes were observed in the blood picture of dogs and rabbits. No evidence of liver damage was noted in the dogs. Repeated examination of the urine gave no evidence of kidney injury. Data are presented on the concentration at various times of inorganic bromide in serum, urine, and brain, and of organic bromide in blood and brain of the exposed and control animals. The histopathologic findings in these and other animals indicate that CH_2ClBr will cause temporary degenerative changes of the liver, but, in contrast to CCl_4, no cirrhosis of the liver was found under the conditions of these experiments. G. M. Petty (Chem. Abstr.).

A Theoretical Note Concerning the Action of Drugs on the Central Nervous System. Barany, E. H. (Univ. Uppsala, Sweden). [*Arch. intern. pharmacodynamie*, **75**, 222–6 (1947).]

The action of drugs affecting synaptic transmission should be more marked in functional systems based on long chains of neurones than in short-chain systems. M. L. C. Bernheim (Chem. Abstr.).

Action of some Curare-like Drugs of the Triethylcholine Phenolic Ether Series on the Superior Cervical Ganglion of the Cat. Depierre, France. [*Compt. rend.*, **225**, 956–7 (1947).]

In the chloralose-anaesthetized cat, the contraction of the nictitating membrane (following postganglionic electric stimulation) is not modified by $[C_6H_5OCH_2CH_2N(C_2H_5)_3I]$ (I) ; $[C_6H_4(OCH_2CH_2N(C_2H_5)_3I)_2]$ (II) ; or $[C_6H_3(OCH_2CH_2N(C_2H_5)_3I)_3]$ (III). However, following preganglionic stimulation, intravenous injection of 2 mgm./kgm. of (I) abolishes the contraction. (I) is as powerful in this respect as the tetraethylammonium ion (cf. Acheson and Pereira, *C. A.*, **40**, 6162[2]) but is not as long acting. For the same effect, 50 and more than 100 mgm./kgm. are needed in the case of (II) and (III) respectively. Hypotensive action parallels that on the sympathetic ganglion. The order of potency for curare-like action, however, is (III) > (II) > (I). Tubarine (from natural curare) has a curarization : paralysis potency ratio of 1 : 5, and (III) differs from tubarine in having a ratio of 1 : 100. Carter D. Johnston (Chem. Abstr.).

Comparison of Dihydroergotamine, Ergotamine, and Other Agents in the Treatment of Migraine. Dannenberg, Thurman. [*Permanente Foundation Med. Bull.*, **4**, 96–103 (1946).]

In 15 cases of true migraine headache injected ergotamine tartrate gave the highest percentage relief followed with decreasing effectiveness by dihydroergotamine, O inhalation, oral ergotamine tartrate, and EtCl spray. Epinephrine and placebos were ineffective. Karl F. Urbach (Chem. Abstr.).

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The following names are printed in SMALL CAPITALS: authors of original articles and of books reviewed. Names of authorities referred to in the text are in ordinary type.

(R.) indicates a *Review*; the title of the book reviewed is followed by the author's name, thus: "Psycho-analysis and its Derivatives, by H. Crichton-Miller (R.)."

(E.) indicates the *Epitome* section; the title of the abstract is followed by the author's name, thus: "Age and human ability. Miles, W. R. (E.)."

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